

# ALASKA AND THE KLONDIKE

ANGELO HEILPRIN









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## ALASKA AND THE KLONDIKE

**By PROF. ANGELO HEILPRIN.**

**Alaska and the Klondike.**

A Journey to the New Eldorado. With Hints to the Traveler and Observations on the Physical History and Geology of the Gold Regions, the Condition of and Methods of Working the Klondike Placers, and the Laws Governing and Regulating Mining in the Northwest Territory of Canada. By ANGELO HEILPRIN, Professor of Geology at the Academy of Natural Sciences of Philadelphia, etc. Fully illustrated. 12mo. Cloth, \$1.75.

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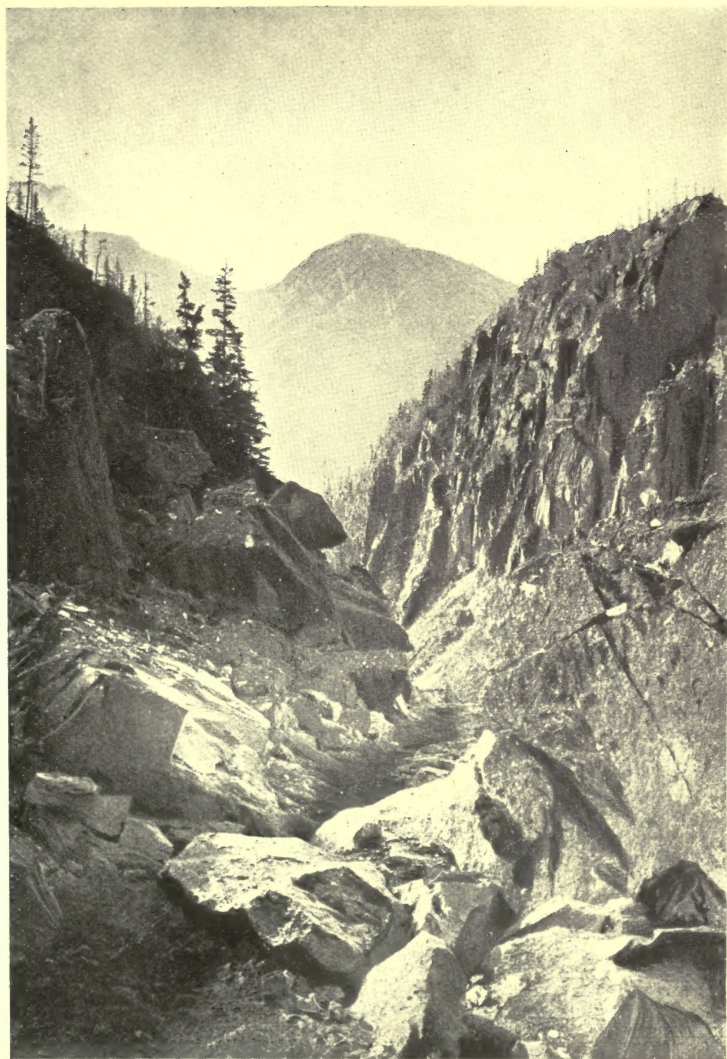
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"Mr. Heilprin has developed his subject with great thoroughness."—*Independent, New York*.

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The White Pass, September, 1898.



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WITH HINTS TO THE TRAVELLER

and Observations on the Physical History and Geology of the Gold  
Regions, the Condition of and Methods of Working the Klondike  
Placers, and the Laws Governing and Regulating Mining in the North-  
west Territory of Canada

BY ANGELO HEILPRIN, F.R.G.S., F.G.S.A.

Late President of the Geographical Society, and Professor of Geology at  
the Academy of Natural Sciences, of Philadelphia; Medalist of the  
Franklin Institute, etc.

FULLY ILLUSTRATED FROM PHOTO-  
GRAPHS AND WITH A NEW  
MAP OF THE GOLD REGIONS



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1903

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## PREFACE.

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IN the following pages and illustrations the author has attempted to portray in its true aspects the region that, in an almost incredibly short period of time, has loomed up to a prominence in the world's eye which finds few parallels in the history of a century.

Much has been written about the Klondike—some of it good, and a great deal more, less good—but, unfortunately, the literature which the remarkable movement of 1898 has created is so overburdened with exaggeration and distortion that it is difficult to obtain from it a proper perspective.

To be able to determine between fact and fancy, and to satisfy a personal knowledge of the region and of its varied conditions, were the incentive to a summer journey, the narration of which, covering the period from the end of July to the middle of October, is here pre-

sented. While by no means pretending to that degree of accuracy and of proper insight which can only come with more protracted and intimate knowledge, the author believes that he has carefully and unprejudicially stated his narrative, and submits it with the hope that it may be of service to some of the many who, both directly and indirectly, have an interest in the region. To many friends in Dawson he is indebted for much kindly assistance and information, and to these collectively he extends his acknowledgments. A special obligation should, however, here be recorded to David Doig, Esq., Manager of the Bank of British North America.

THE AUTHOR.

GEOGRAPHICAL SOCIETY OF PHILADELPHIA, PA.

*May, 1899.*

P. S.—Since the writing of this Preface intelligence has been received of the destruction by fire, on April 26th, of almost the entire business quarter of Dawson. The energy—as in the past—of its inhabitants will doubtless soon restore the settlement to its former condition of activity.



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THE author has in the illustrations made extensive use of the photographs of Curtis (of Seattle), Barley (of Skaguay), and E. A. Hegg (of Skaguay and Dawson). To the last named he is placed under special obligation for permission to use a number that have been copyrighted.



# ALASKA AND THE KLONDIKE.

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## I.

### IN BY THE WHITE PASS AND OUT BY THE CHILKOOT.

HARDLY two years ago the names Dawson and Klondike were entirely unknown to the outside world, and geographers were as ignorant of their existence as was at that time the less learned laity. To-day it may be questioned if any two localities of foreign and uncivilized lands are as well known, by name at least, as these that mark the approach to the arctic realm in the northwest of the American continent. One of those periodic movements in the history of peoples which mark epochs in the progress of the world, and have their source in a sudden or unlooked-for discovery, directed attention to this new quarter of the globe, and to it stream and will continue to stream thousands of the world's inhabitants. Probably not

less than from thirty-five thousand to forty thousand people, possibly even considerably more, have in the short period following the discovery of gold in the Klondike region already passed to or beyond the portals of what has not inaptly been designated the New Eldorado. To some of these a fortune has been born; to many more a hope has been shattered in disappointment; and to still more the arbiter of fate, whether for good or for bad, has for a while withheld the issue.

In its simplest geographical setting Dawson, this Mecca of the North, is a settlement of the Northwest Territory of Canada, situated at a point thirteen hundred miles as the crow flies northwest of Seattle. It is close to, if not quite on, the Arctic Circle, and it lies the better part of three hundred miles nearer to the pole than does St. Petersburg in Russia. By its side one of the mighty rivers of the globe hurries its course to the ocean, but not too swiftly to permit of sixteen hundred miles of its lower waters being navigated by craft of the size of nearly the largest of the Mississippi steamers, and five hundred miles above by craft of about half this size. In its own particular world, the longest day of the year drawls itself out to twenty-two

hours of sunlight, while the shortest contracts to the same length of sun absence.

During the warmer days of summer the heat feels almost tropical; the winter cold is, on the other hand, of almost the extreme Siberian rigour. Yet a beautiful vegetation smiles not only over the valleys, but on the hilltops, the birds gambol in the thickets, and the tiny mosquito, either here or near by, pipes out its daily sustenance to the wrath of man. The hungry forest stretches out its gnarled and ragged arms for still another hundred or even three hundred miles farther to the north.

Up to within a few years the white man was a stranger in the land, and the Indian roamed the woods and pastures as still do the moose and caribou. To-day this has largely changed. The banks of the once silent river now give out the hum of the sawmill, the click of the hammer, and the blast of the time-whistle commanding either to rest or to work. A busy front of humanity has settled where formerly the grizzly bear lapped the stranded salmon from the shore, and where at a still earlier period—although perhaps not easily associated with the history of man—the mammoth, the musk-ox, and the bison were masters of the

land. The red man is still there in lingering numbers, but his spirit is no longer that which dominates, and his courage not that of the untutored savage.

The modern history of Dawson begins with the middle of 1896, shortly after the "public" discovery of gold in the Klondike tract. Three or four months previous there was hardly a habitation, whether tent or of logs, to deface the landscape, and the voice of animate Nature was hushed only in the sound of many waters. At the close of the past year, as nearly as estimate can make it, there were probably not less than from fourteen thousand to fifteen thousand men, women, and children, settled on the strip of land that borders the Yukon, both as lowland and highland, for about two miles of its course near the confluence of the Klondike. Many of these have located for a permanence, others only to give way to successors more fortunate than themselves. Some of the richest claims of the Bonanza, now a famed gold creek of the world, are located hardly twelve miles distant, and the wealth of the Eldorado is discharged within a radius of less than twenty miles. Over the mountains that closely limit the head springs of Bonanza and Eldorado, Hunker, Dominion,





Looking down the Lynn Canal.—Skaguay River, with Skaguay on the left.



and Sulphur Creeks thread their own valleys of gold in deep hollows of beautiful woodland, fascinating even to-day, but already badly scarred by the work that man has so assiduously pressed in the region. This is the Klondike, a land full of promise and of equal disappointment, brought to public notice in the early part of 1897, when intelligence was received by the outside world regarding the first important gold location on Bonanza Creek in August of the year previous.

On the 24th of July of the past year I found myself on the principal thoroughfare of Skaguay, the ubiquitous Broadway, contemplating a journey to the new North. The route of travel had been determined for me in part by the non-arrival at Seattle of the expected steamers from the mouth of the Yukon River, and by that woeful lack of knowledge regarding "conditions" which so frequently distinguishes steamship companies. It was to be, therefore, the overland route, and from Skaguay it was merely the alternative between the White Pass and the Chilkoot Pass or Dyea trails. The two start from points barely four miles apart, cross their summits at very nearly the same distance from one another, and virtually terminate

at the same body of inland water, Lake Lindeman, the navigable head of the great Yukon River. A more than generous supply of summer heat gave little warning of that bleak and severe interior with which the world had been made so familiar during the last twelve-month, and from which we were barely six hundred miles distant; nor did the character of the surroundings betray much of an approach to the Arctic Circle. Mountains of aspiring elevations, six thousand to seven thousand feet, most symmetrically separated off into pinnacles and knobs, and supporting here and there enough snow to form goodly glaciers, look down upon the narrow trough which to-day is the valley of the Skaguay River. At the foot of this ancient fiord lies the boom town of Skaguay. Charming forests, except where the hand of man has levelled the work of Nature to suit the requirements of a constructing railway, yet clothe the mountain slopes and fill in the gap that lies between them, shadowing the dense herbage and moss which almost everywhere form an exquisite carpeting to the underlying rock. The ear may catch the strains of a few mosquitoes, or the mellow notes of the robin or thrush, but rising far above these in the

majesty of tone and accent is the swish of the tumbling cataracts which bring the landscape of Norway to America. Man, it is claimed, is much the same the world over; but there is a limitation. The second habitation of white man in Skaguay was established less than a year before my visit; yet at that time, presumably to meet the demands of a resident population of nearly five thousand, and of the wandering hordes pressing to the interior, the destructive hand of the advertiser had already inscribed on the walls of rock, in characters twenty feet or more in height, and sufficiently elevated to make them nearly the most conspicuous elements of the landscape, the glories of cigars, the value of mental and physical specifics, and of other abominations which were contrived to fatten the Yankee pocket.

Had it not been for the kindly advice of one who had just returned from the Klondike, and who claimed to have crossed both passes fifty times, I should almost unhesitatingly have taken the White Pass trail; but the representation that beyond the summit the mud would be neck-deep and virtually impenetrable for a distance of twenty miles or more, cast the decision in favour of the Chilkoot. The fortunate



or unfortunate circumstances that a billowy sea made a landing of passengers at Dyea impossible on that day threw me back upon my first resource, and about two hours before midday of the 30th I was mounted on a horse following out the Skaguay trail. By seven o'clock in the evening of the following day I had reached Lake Lindeman, and about a half hour later Lake Bennett, the starting point of the lines of Upper Yukon steamers which had recently been established. We had made the forty miles of the dreaded White Pass trail without serious hindrance or delay, up over the summit of twenty-eight hundred and sixty feet elevation, and down over a course which was depicted in colours of hardship that would have done more truthful service in describing a pass in the Himalayas. There was no mud, not a trace of snow or ice except on the mountain declivities, and had it not been for a horse that was both stiff and lame, and required my attention as pedestrian to an extent that had not been bargained for, the journey would have been an exceptionally delightful one.

It is true that an unfortunate fall at one time almost deprived me of my animal, but the service of tackle soon put him to rights and



Skaguay in May, 1898.



to his feet, and but few blood marks were left on the rocks to tell of the struggle. The most disagreeable incident of the journey was a dense and shifting fog, which so blocked out the landscape of early evening as to necessitate "feeling" the brokenness of a glaciated country in order to ascertain wherein lay the trail. But beyond this there was a perpetual delight in the landscape—in the narrow rocky defile, the bursting torrent, the open meadows, with their carpet of green and variegated with fireweed, gentian, rose, and forget-me-not, which more than compensated for the little vexations that allied themselves with the journey.

It is not often that the selection of a route of travel is determined by the odorous or malodorous qualities which appertain thereto. Such a case, however, was presented here. It was not the depth of mud alone which was to deter one from essaying the White Pass route; sturdy pioneers who had toiled long and hard in opening up one or more new regions, laid emphasis upon the stench of decaying horse-flesh as a factor of first consideration in the choice of route. So far as stench and decaying horse-flesh were concerned, they were in strong evidence. The Desert of Sahara, with its lines of

skeletons, can boast of no such exhibition of carcasses. Long before Bennett was reached I had taken count of more than a thousand unfortunates whose bodies now made part of the trail; frequently we were obliged to pass directly over these ghastly figures of hide, and sometimes, indeed, broke into them. Men whose veracity need not be questioned assured me that what I saw was in no way the full picture of the "life" of the trail; the carcasses of that time were less than one third of the full number which in April and May gave grim character to the route to the new Eldorado. Equally spread out, this number would mean one dead animal for every sixty feet of distance! The poor beasts succumbed not so much to the hardships of the trail as to lack of care and the inhuman treatment which they received at the hands of their owners. Once out of the line of the mad rush, perhaps unable to extricate themselves from the holding meshes of soft snow and of quagmires, they were allowed to remain where they were, a food offering to the army of carrion eaters which were hovering about, only too certain of the meal which was being prepared for them. Oftentimes pack saddles, and sometimes even the



packs, were allowed to remain with the struggling or sunken animal—such was the mad race which the greed of gold inspired.

On October 9th I was again at Bennett, this time returning from my journey into the interior, and full of experience of what steam navigation on the upper six hundred miles of Yukon waters could mean. There was now a change in the sentiment regarding the quality of the two passes. The Pacific and Arctic Railway, the pioneer of Alaska steam railways, was operating twelve miles of track, and had thus materially reduced the "hardships" of the Skaguay trail; the Chilkoot, on the other hand, was represented to be in the worst of moods, and prepared to put the passing traveller into the same condition. It was more than late in the season, but the winter's blasts had been stayed off by a full month, and there were still no signs of their coming. A little ice had begun to form along the river's margin and over sheltered pools, and an occasional cool night made demands for moderately warm clothing proper; but, on the whole, the temperature was mild and balmy, and to its influence responded a vegetation which in its full glory might easily have called to mind the region of the Juniata.

Although strongly warned against taking the Chilkoot Pass so late in the season, many of the outgoers, whose recollections of events in the early part of the year were still vividly fresh, and who could not be persuaded that the period of a few months had so effaced the conditions of the past as to permit a steam railway to enter for twelve miles into the region, chose it in preference to the White Pass. My own mind had been cast in the same direction; not, however, from a point of judicious preference, but merely because I was anxious to see for myself that which had become historic in the movement of 1898, and of instituting a direct comparison of the physical features and general characteristics of the two routes. With no serious hindrance, the journey from Bennett out was that of a full day only, and there was no particular reason to suspect that there would be delay. Snow had fallen on the summit and whitened all the higher points, but seemingly it hung in only a measurably thin crust, and with not enough to necessitate breaking a trail.

A crude steam ferry across Lake Lindeman cuts off about six miles from the first part of the trail, after which a rapidly rising path, sufficiently distinct to permit it to be easily fol-



A summit lake, White Pass route.



lowed, winds over the rocks and among rock *débris* to Long Lake, situated at an elevation of some twenty-six hundred feet, where night shelter is found in a fairly comfortable tent. Up to this point we had encountered but little snow, and the condition of the trail was such as to allow of rapid travel. A wise caution detained us here for the night, and the incoming of a solitary traveller warned us that a blizzard had struck the summit of the pass and buried it beneath a heavy mantle of snow. Had we been a day earlier we might have crossed dry shod, a very exceptional condition at this time of the year, but now the possibilities of a struggle gravely presented themselves. A light frost in the night had fairly congealed the soil, but the lake did not carry enough surface ice to interfere with the progress of a scow, and we reached the farther end without difficulty. The two-mile portage to Crater Lake was largely a snow traverse, but an easy one; at this time, however, it began to snow heavily, and the immediate prospect was anything but cheerful. A low fog hung over the waters, but not so low or so dense as to prevent us from occasionally catching glimpses of the rocks which projected with disagreeable frequency from an



assumed bottomless pit or "crater." The ascent from Crater Lake to the summit, somewhat less than three hundred and fifty feet, was made in about half an hour, and then began the steep and sudden plunge which marks the southern declivity of this famous mountain pass. Some little caution was here required to keep a foothold, and a too sudden break might have led to an exhilarating, even if not anxiously sought after, glissade; but in truth, to any one only moderately practised in mountaineering, even this steep face, which descends for a thousand feet or more from a summit elevation of thirty-four hundred feet, presents little difficulty and hardly more danger. What there is of a trail zigzags in wild and rapid courses over an almost illimitable mass of rock *débris*, at times within sheltered or confined hollows, but more generally on the open face of the declivity. This it is more particularly that carries to many a certain amount of fear in the making of the passage, but, with proper caution and the right kind of boots, nothing of danger need be apprehended.

Unfortunately for the enjoyment of the scenery of the pass, I could see but a modest part of it. Although snow was no longer falling,

and the atmosphere had settled down to a condition of almost passive inactivity—much to the surprise, if not disappointment, of a few who had prophesied a stiff and biting wind the moment we passed the divide—heavy cloud banks hovered about the summits, and only at intervals did they afford glimpses of the majestic mountain peaks by which we were surrounded. Enough, however, could be seen to justify for the pass the claims of most imposing scenery, and its superiority in this respect over the White Pass. The temperature at the time of our crossing was a few degrees below freezing, perhaps  $25^{\circ}$  or  $27^{\circ}$  F., but our rapid walk brought on profuse perspiration, and it would have been a pleasure, if a sense of proper caution had permitted, to divest ourselves of mackinaws and travel in summer fashion. We made Sheep Camp, with its surroundings of beautiful woodland, shortly after noon, and Cañon City, which, as the terminus of a good coach road to Dyea, virtually marks the end or beginning of the Chilkoot trail, at two o'clock.

To a mountaineer or traveller of ordinary resource neither the White Pass nor the Chilkoot Pass will appear other than it actually is—i. e., a mountain pass, sufficiently rough and

precipitous in places, and presenting no serious obstacle to the passage of man, woman, or child. True, I did not see them at their worst, but they were both represented to be frightfully bad even at the time of my crossing. The seasonal effects, doubtless, do much to modify the character of the trails, and even local conditions must mould them to a very considerable extent. It is not difficult to conceive of miry spots along the White Pass trail, or of snow-swept areas on the Chilkoot, and there certainly must be times when both trails are in a measure or way impassable. All trails are, however, subject to modifications in character, and even the best is at times sufficiently bad. Trains of pack animals cross the White Pass both winter and summer, and, even with the great loss to their "forefathers," their testimony of steady work is a recommendation of the class of service in which they are engaged. A limited number of cattle and horses have also found their way over the summit of the Chilkoot Pass—some crossing immediately after us—but the trail is too steep on the ocean side to fit it for animal service, although I strongly suspect that were the location in Mexico instead of in Alaska, there would be a goodly

number of *caballeros* and *arrieros* to smile at the proposition of presented difficulties. Indian women seem to consider it no hardship to pack a fifty-pound sack of flour and more over the summit, and there are many men who do not hesitate to take double this load and make several journeys during the same day. It is the load that kills, and it was, doubtless, this influence, united to a cruel method, which so strongly impressed the pioneers with the notion of extreme hardship. The most level and perfect road, to one carrying for miles a pack of from sixty to eighty pounds, soon begins to loom up a steep incline.

Both the northern and southern slopes of the Chilkoot Pass are largely surfaced with shattered rocks, over which, with occasional deflections across more pleasant snow banks, a fairly well-defined trail mounts on either side to the summit. In its grim landscape effects, more particularly on the inner face, where a number of rock-bound tarns—Crater Lake, Long Lake, Deep Lake—afford a certain relief to a degree of desolation which the scene carries, it reminded me much of the famous Grimsel Pass, and here as well as there the modelling of the surface through glacial action was

strongly in evidence. The vastly towering Alpine peaks were, however, wanting, and the glaciers that still appeared showed that they had long since passed their better days. The actual summit is trenched by a narrow rocky gap, roughly worn through walls of granite, and by it have passed the thousands who have pressed to the interior. There is no timber growth at or near this summit, nor is there soil sufficient to give support to an arboreal vegetation. Nearest to the top line a prostrate form of scrubby hemlock (*Tsuga Pattoniana*) alone makes pretense to being a tree, but below it of itself grows to majestic proportions, and about Sheep Camp, with Menzie's spruce, a birch, and cottonwood (*Populus balsamifera*), forms part of the beautiful woodland, which with ever-increasing freshness descends to the lower levels.

Lest I be accused of too freely seeing the beauties of the northern landscape, I venture in my defense the following graphic description of the Dyea Valley from the pen of another traveller and geologist, Professor Israel Russell: "In the valley of the Taiya the timber line is sharply drawn along the bordering cliffs at an elevation of about twenty-five hundred feet.



Above that height the mountain sides are stern and rugged; below is a dense forest of gigantic hemlocks, festooned with long streamers of moss, which grows even more luxuriantly than on the oaks of Florida. The ground beneath the trees and the fallen monarchs of the forest are densely covered with a soft, feathery carpet of mosses, lichens, and ferns of all possible tints of brown and green. The day I traversed this enchanted valley was bright and sunny in the upper regions, but the valley was filled with drifting vapours. At one minute nothing would be visible but the sombre forest through which the white mist was hurrying; and the next the veil would be swept aside, revealing with startling distinctness the towering mountain spires, snowy pinnacles, and turquoise cliffs of ice towering heavenward. These views through the cloud rifts seemed glimpses of another world. Below was a sea of surging branches that filled all the valley bottom and dashed high on the bordering cliffs. Much space could be occupied with descriptions of the magnificent scenery about Lynn Canal, and of the wonderful atmospheric effects to be seen there, but the poetry of travel is foreign to these pages, and must be left for more facile pens."

In its present condition the Chilkoot trail has the advantage over the Skaguay in its shorter length, the distance from Dyea to the head of Lake Lindeman, the virtual head of river navigation, being about twenty-four miles; from Skaguay to Bennett, along the usual White Pass trail, the distance is fully ten or twelve miles longer, although a cut-off by way of the summit lakes reduces the traverse considerably. At intervals along both routes fairly good accommodation can now be had. One condition of the Chilkoot Pass, and that a not altogether light one, places it during certain months at a disadvantage as compared with the White Pass. I refer to the dangers from avalanches. These are of the true Alpine type, having their source in the heavy beds of snow which cling with bare support to the steeply pitching mountain walls, in places along some of the narrowest parts of the pass. The appalling catastrophe of April, 1898, which caused the loss of sixty-three lives, and followed closely upon an earlier event of like nature, had its seat in the steep, rocky ledges of the east wall between Sheep Camp and the Scales. It is claimed that the Indians along the trail clearly foresaw the impending event, and announced it in unmis-



Coming down the White Pass.—Winter.



takable language, but their warnings were allowed to go unheeded. They themselves did not make the traverse on that day. The minor disaster of the following December (9th), when but six lives were sacrificed, took place on the steep declivity which faces Crater Lake, not far from the service house of the Chilkoot Pass Aërial Tramway Company. Here the mountain face is very precipitous and gives but insecure lodgment to the snow. The Indians carefully watch all natural signals and urge a rapid journey. However useful these trails may have been in the past, how well or how indifferently they may have met the wants of the pioneers of 1897 and 1898, they are destined before long to be thrown into that same obscurity which they held when the Indians and a few adventurous trappers and traders alone made use of them as avenues of communication between the inner and outer worlds. The advance of the iron horse is now an assured fact, and the Pacific and Arctic Railway, whose construction is engineered by some of the most experienced mechanical talent of Great Britain and America, will minister before many months not alone to the professional interlopers in the new land, but to hosts of tourists as well. The road, which



in reaching White Pass summit will have a maximum gradient of a little more than five per cent, is of narrow-gauge construction, solidly supported on dressed ties brought from the forests of Oregon. No terminal appears to have been as yet definitely determined upon, although the charter act recites Fort Selkirk on the Yukon, about one hundred and sixty miles above Dawson, as such. Operating as it now does sixteen miles or more of road, it is already an extensive freight carrier; but until its completion to Bennett, or to some point close to a navigable part of the Yukon River, the Chilkoot Pass tramway, a remarkable construction which crosses over the summit and deposits at Crater Lake, must continue to handle a large part of the business intended for the interior.

It is safe to say that the stirring scenes which were enacted on the passes during the winter of 1897-'98, when the impedimenta of travel and occupation were packed together in the manner of an army camp, will not be repeated again. The past history was a short one, and it gives way to one of greater promise.

## II.

### DOWN THE UPPER YUKON.

ARRIVING at Bennett shortly before eight o'clock, when the long hours of daylight projected themselves with undiminished intensity into the period of ordinary evening, I was almost immediately accosted by one of the officers of the little steamer Joseph Clossett relative to my securing passage to Dawson. The steamer was one of four or five that had recently been constructed on Lake Bennett for the purposes of upper Yukon navigation, and only a few weeks before were "living trees" along the banks of the great northern river. My first impulse was to immediately engage passage, especially as the alluring prospect was held out that we should make a continuous journey, sweeping down the Miles Cañon and through the White Horse Rapids—a condition that was no longer possible with the steamers of the "older" established lines—i. e., of one month's antiquity. They called for a four-and-a-half mile

portage, over which freight and baggage are carried by a rude but sufficiently efficient pole tram. A second thought reminded me that some of my pack had not yet reached Bennett, and believing that in a land of recent opening it was not well to be too far separated from one's belongings, I demurred to the unusually favourable proposition of fifty dollars to Dawson, with special payment for meals, and decided to remain over for some twenty-four or thirty hours. As subsequent events showed, it was well that I did so, for the Clossett, in making the effort to slide through Miles Cañon, struck the gateway of basaltic rocks on entering, hit once or twice within the narrow sluiceway, and finally dropped to the bottom, in about four feet of water, just before being whirled into the frothy mass of the White Horse Rapids. Fortunately, most of the passengers had preferred the portage to the water way, and a few were treated to the not exactly uninspiring spectacle of seeing their ship go down. No lives were lost, and much the greater part of the mishap, apart from injury to the steamer itself, was the sousing of a considerable quantity of fresh fruit intended for the benighted inhabitants of Dawson.

Bennett, at the time of my visit, was no

longer the Bennett of three or four months before. Then it was a busy ship-building port, turning out more boats in a given time than probably any other town in the world, large or small. The skilled and the unskilled were hewing and calking, all bent upon the one common theme of having a boat, and by means of it of reaching Dawson or some place in near proximity to the gold fields. No more inspiring lesson teaching man's ingenuity and determination could be found than this one of Nature's shipyard. One and all seem to have got suited and fitted, and within a period of some two months not less than three thousand craft—sailboats, scows, and canoes, many of the lighter ones brought bodily over the passes—were launched upon the still icy waters of Lake Bennett. At that time the water-front was lined or packed with tents, for a population of several thousand had suddenly been planted where before a few individual souls were considered sufficient to admire the beauties of Nature by which they were surrounded.

On the first day of August the once busy spot bore the air of almost hopeless desertion. Some tents, shacks, and "hotels" there still were, for the population had not entirely de-

parted, but the thousands had dwindled to a lingering hundred or two hundred, whose necessities, apart from food, were more than met by a goodly number of stores and depots of merchandise. In one tent was housed the most energetic Bennett Lake and Klondike Navigation Company, who operated the Royal Mail Line of steamers on the Upper Yukon, consisting of the Nora, Ora, and Flora—stern-wheel craft of some seventy to eighty feet length, with a sufficiency of power to develop speed in at least the direction of the river's powerful current, and with about as unstable accommodation as any housing could properly have. Still, these steamers, in opening up the upper river and affording a new outlet from the far interior, answered a most important purpose, and their construction and management reflect more than ordinary credit upon the gentlemen who in an almost incredibly short space of time conceived and carried out the enterprise; and it should be recalled that all the heavy parts of machinery had to be transported over the passes. The fare to Dawson was seventy-five dollars, with additional payment for meals (one dollar each). The journey was made in four days and a half, travelling day and night.



The surroundings of Bennett are hardly such as to bring out immediate enthusiasm even from the lover of Nature. It has a semi-Alpine setting, with beetling granite cliffs of three and four thousand feet elevation making both foreground and background, while to one side, the south, it overlooks the break that leads to Lake Lindeman and the Chilkoot Pass beyond. While sufficiently imposing in a way, the scene is too condensed, and the eye seeks to go beyond the largely barren and glaciated rocks that stare at you from the opposite side of the waters, hardly a half mile away. There is often, too, a most uncompromising wind blowing from all quarters at nearly the same time, and with it come the chilly oaths that are nurtured among the upper ice-fields. There are days, however, of lovely splendour, and the clear atmosphere throws out a more distant landscape of mountain peaks and summits, many of them covered with perpetual snow, others red-stained with the decomposing iron which has been infused into the volcanic masses that here and there associate with the granites. It is then that one is prepared to admit the magnificence of the scenery.

We were just thirty as passengers on the

Nora, the majority going into the interior to make money through the sale of merchandise. One had fruit and vegetables, another had tar paper for the lining of log-cabins, and a third a selection of general merchandise or human notions. More than one sleek and Sabbath-inspired associate had whisky under his control, but no one seems to have thought of either brooms or window-glass, two articles which had almost entirely escaped the inventories of those who had preceded to Dawson. A week or two before my arrival in the metropolis of the North the few brooms that happened to exist there brought fourteen dollars apiece, and on the first day of August the market ruled at eight dollars. Still, it can hardly be said that my associates made a mistake in their selection of *articles de ventes* or *de luxe*, as they disposed of almost everything in the first few days after their arrival. One, of Jewish persuasion, was sufficiently fortunate to "clean out" in two hours' time, and was actually preparing to leave for Skaguay on a return journey before I had been fairly installed in my hotel.

Our passenger list was entirely deficient in representatives of the weaker sex, which was thought an advantage by those who are habitu-



Crossing the Chilkoot summit.



ally grumbling about the constraint that the presence of woman imposes, and the this, that, and the other which one is theoretically obliged to do when she is in evidence. My suspicion is, however, that had there been a woman or two with us there might have been a slight improvement in the character of the food supply—for which we were paying at the rate of a dollar a meal—or at least in the manner of its preparation. One naturally expects growling and grumbling on a journey of this kind, and truly there were grounds for dissatisfaction on this occasion. And yet, how moderate and modest was the complaint, compared with that which passed to heaven on our outward journey seven weeks later! Our sleeping quarters were wooden bunks, placed in overhead tiers of threes, to which each passenger furnished his own bedding, consisting in most cases of one or more blankets designed for the double service of protecting against the cold and softening that certain hardness which every one knows to surround bare boards.

Mountain-inclosed Lake Bennett, whose narrow fjordlike trough keeps itself well within a half mile or a mile and a half, has a length of somewhat over twenty-six miles, and throws out

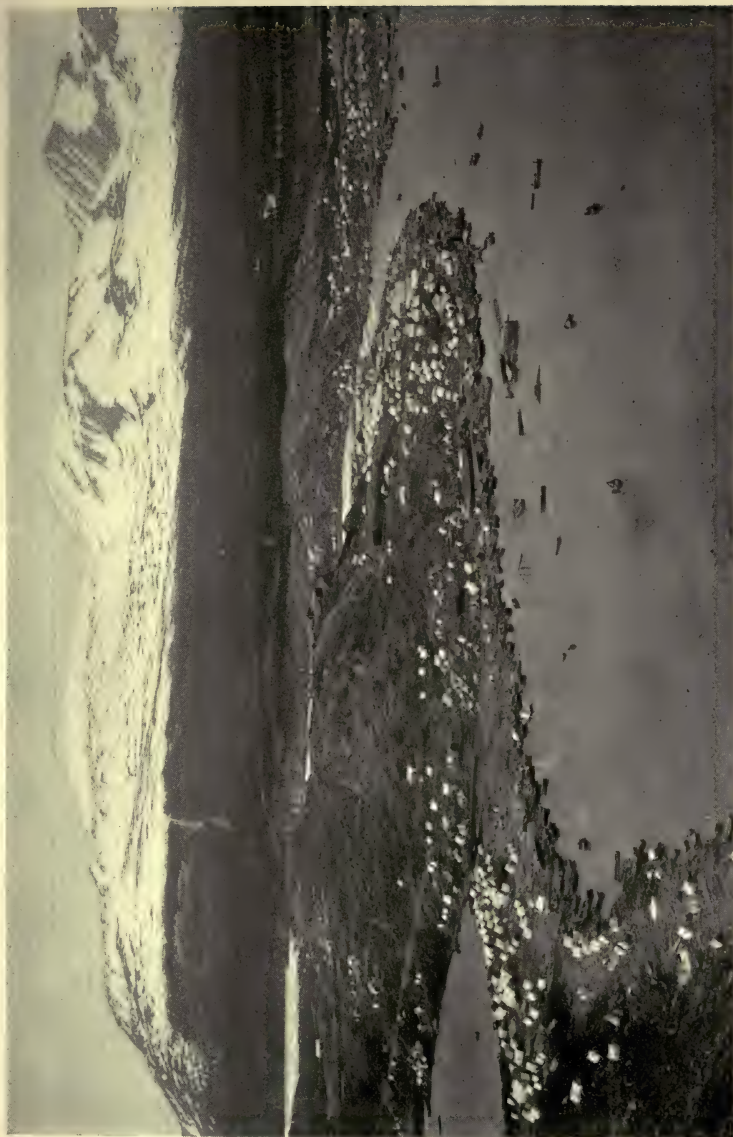


the waters of the Yukon at the neck or narrows known as Caribou Crossing; beyond this we enter another partially encased sheet of water, Lake Tagish, of somewhat less length than Bennett, pass from this through a "river narrows" to Lake Marsh, and then again over a river stretch of twenty-four miles, when we reach the basaltic mass whose columns constitute the walls of Miles Cañon. This is the virtual terminal of the first section of upper Yukon navigation, since up-going boats of whatever form are unable (or have been unable thus far) to stem the exceedingly turbulent waters of the White Horse Rapids and Miles Cañon. Thousands of craft, on the other hand, have safely made the traverse in the opposite direction, many of them under the guidance of a skilled pilot, others in a haphazard manner under the control of their respective owners, and still others *nolens volens* so far as either wish or word of command was concerned. It has not been possible to determine the casualties, but they appear to have been exceedingly few, taking into account the seriousness of the journey and the inexperience of many who attempted it. A present law prohibits the descent except under the guidance of an experienced pilot, and women and children

are obliged to make the land portage. It is believed that by closely hugging the shore a properly constructed steamboat might make the up journey through the rapids, and however hazardous this may appear, it is certain that the project of forcing the waters is being carefully considered by engineers and capitalists.

In this upper course of about ninety-five miles, where much the greater part is constituted by lakes, and where the total fall is perhaps not more than thirty feet, Lake Bennett being about 2,165 feet above the sea, and the head of Miles Cañon 2,140 feet, the river has a barely appreciable current, and the journey is made in either direction in very nearly the same running time—in about eleven hours going down and twelve hours going up. The greatest obstacles to navigation in this stretch are the winds—especially noticeable where blowing out of Windy Arm, a southerly extension of Lake Tagish—which are at times too boisterous to permit the smaller craft venturing out; and even the steamers eye these winds with a certain amount of suspicion. It is probable that the greatest depth of the lakes reaches close to four hundred feet, a measure which has been found for Lake Lebarge, farther down the stream; in

their narrower surroundings, as about Lake Bennett, the mountain banks plunge steeply into the water, evidently finding a direct or even continuation of slope beneath the surface. To what extent the ancient glaciers were instrumental in fashioning or helping in the formation of these deep and comparatively narrow troughs I did not have the opportunity to determine, but any one who has carefully studied the configuration of the land here and about Lake Lebarge, and compared it with that of the region beyond or north of the limit of glaciation, will hardly have failed to be impressed with the potency of ice action. There are knolls, valleys, and plains, whose existence in their present form is manifestly the result of the scour of ice; and if this is so manifest in the land above the water surface, there is every reason to believe that much of the configuration below it is to be ascribed to the same cause. The movement of the ice has been in directions coincident with the trend of the lakes and transverse to it, the latter course being largely induced by local conditions. The extreme shallowness of the water at different points of emergence from the lakes is remarkable; thus, below Lake Marsh it drops in places to six feet, or perhaps even less.



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Klondikers' camps on Lake Bennett, June, 1898.





At Tagish Post, where an official registry is made of the number and style of craft going down the river, we visited the quarters of the Northwest Mounted Police, occupying a charming site of cleared land surrounded by beautiful woods and copses. Major Woods and Captain Strickland were enthusiastic in their admiration of the site, and really it seemed to me as delightful and invigorating a spot as one could well wish to be located in. The residences, or bureaus, were all well constructed log-cabins, rambling in their extent, and most inviting in their neat and solidly established interiors. A number of robust and proud-looking dogs, some of them of the Indian or Eskimo breed, others of Newfoundland or St. Bernard extraction, took lazy possession of the sunshine, scattering themselves about regardless of that rule of order which determines their distribution elsewhere. They were now enjoying their season of rest, the period of labour beginning with the incoming of snow and ice, when their place is in the harness ahead of the lash.

It was here that the charms of the northern vegetation were first brought home to me—the rich green forests of pine, spruce, and juniper, with their scattering of cottonwood, birch, and

willow, and a shrubbery of composite nature, brilliant with the floral elements that entered into it. The omnipresent pink fireweed (*Epilobium*) and blue lupine (*Lupinus nootkatensis*)—the latter closely resembling a species that I everywhere met with on the high volcanoes of Mexico at an elevation of about eleven to twelve thousand feet—were in themselves sufficient to illumine any landscape, but they were far from being alone in their showing. Here, again, was the forget-me-not (*Mertensia*), in its most azur-ean blue, and with it the starwort, anemone, and primrose. The wild rose (*Rosa sayi*) was wonderfully abundant, but unfortunately nearly all the flowers had blown by this time, and we were treated principally to the hips. Captain Strickland assured me that only a few days previously the members of the post had regaled themselves upon the last crop of native and delicious strawberries; the blueberry was still *en faveur*. So much for the barrenness of this region of the far north!

In Miles Cañon the stream is compressed into a width of about a hundred feet, while its velocity is raised to seven or eight miles. A massive basaltic plateau is here cut through to a depth ranging from fifty to one hundred feet,

with the walls of the trench holding a nearly vertical position. No absolute age has yet been determined for this volcanic intrusion, but it almost certainly antedates the present channel of the river, which runs athwart the rampart without swerving in its course. A fairly good road house, "McCauley's," stands a little above the head of the gorge on the east bank, and from it starts the portage tramway—a primitive pole road, with small and not over-steady cars dragged by most deliberately pacing horses—which conveys baggage and freight over a distance of about four miles to the foot of the rapids. A rival tramway, designed to "tap" the river half a mile or more above McCauley's, and working largely on the line of the old portage trail on the west bank, is being thought of, and some preliminary survey work looking toward its construction has been begun.

Just below the lower end of the White Horse Rapids, a beautiful exhibition of tumultuous waters, our passage tickets transferred to the Ora, another one of the *bateaux mouches* which operate on this part of the river. Deficiency in size and accommodation was in this instance more than compensated for by the presence of a captain of Mississippi experience, and those

who have travelled with Captain R—— will not forget the watchful eye which he forever turned upon the idiosyncrasies of the river's windings, and his penetrating knowledge of the endless bars and shallows which impede the Yukon channel between this point and Dawson.

Lake Lebarge, which we enter twenty-four miles after leaving the White Horse Rapids, offers probably the most imposing and interesting scenery along the entire route, for it is here that the mountains are thrown into the most fantastic forms, their sides and summits being riven and polished by past glacial forces to a most marked degree. It is here that the lesson of ice action is presented in a picturesque and at the same time imposing way which is hardly to be matched elsewhere. The freshly exposed surfaces of rock, occurring over broad expanses, more particularly arrest attention, for they still glisten in the smooth contours which the moving ice has impressed upon them. In places, as Dawson has well observed, the sloping surfaces "are still so smooth that it is difficult to walk over them." High up, too, the eye clearly follows the long superimposed lines of river terraces, rising two to four hundred feet or more

above the present channel, and in places four, five, or even six of such terraces are clearly distinguishable one above the other. After about thirty-one miles of this placid open expanse we are drifted out into what is locally known as "Thirty Mile," a winding stretch of river of this length (more accurately, twenty-seven miles), in which the current, at first moderate, ultimately rushes down with almost the velocity of a mill-race, about seven miles. Standing on the bow of the vessel you seem to shoot down a sluice, so steeply pitched does the water appear to the eye. It is in this stretch that the river reflects itself in its most intense transparency. Fifteen and twenty feet through the crystal green-tinted waters the bottom is brought up with a vividness at times truly startling, and one is almost constrained to take the sounding-pole to verify a seeming depth of only five or six feet. To Lake Lebarge as a sifting and depositing reservoir is mainly due this extreme purity, and absence of sediment; it is the history repeated on an equally extensive scale, and with equally beautiful effect, of Lake Geneva and the river Rhone issuing from it at its lower end. Along much of this stretch the vegetation grows quite down to the water's



edge—some of it, indeed, being immersed in the water.

Just below the base of the Thirty Mile the Yukon receives its most important tributary above the confluence with the Pelly. The Hootalinqua, Teslin-too, or Newberry River, a most powerful stream, and one which has fashioned for itself a valley that is seemingly more directly continuous of that of the main stream below than the valley of the Thirty Mile, enters here from the right and floods the united stream with a broad parting of mud sediment. It is not without reason that some have considered this the main stream, for, although it throws in fully one half less water than the Thirty Mile, it shows a directer course, and in its length to and inclusive of Lake Teslin it is a generous rival of the western or Bennett arm. Justly speaking, it may be considered to be the right or eastern fork of the Yukon as distinguished from the somewhat more powerful left or western fork—the stream issuing from Lake Bennett. The relations of these two arms or forks are given by Dawson and Ogilvie as follows: The Lewes (Yukon) River near its confluence with the Hootalinqua, measuring 420 feet in width, has a current of 5.68 miles per hour, and discharges

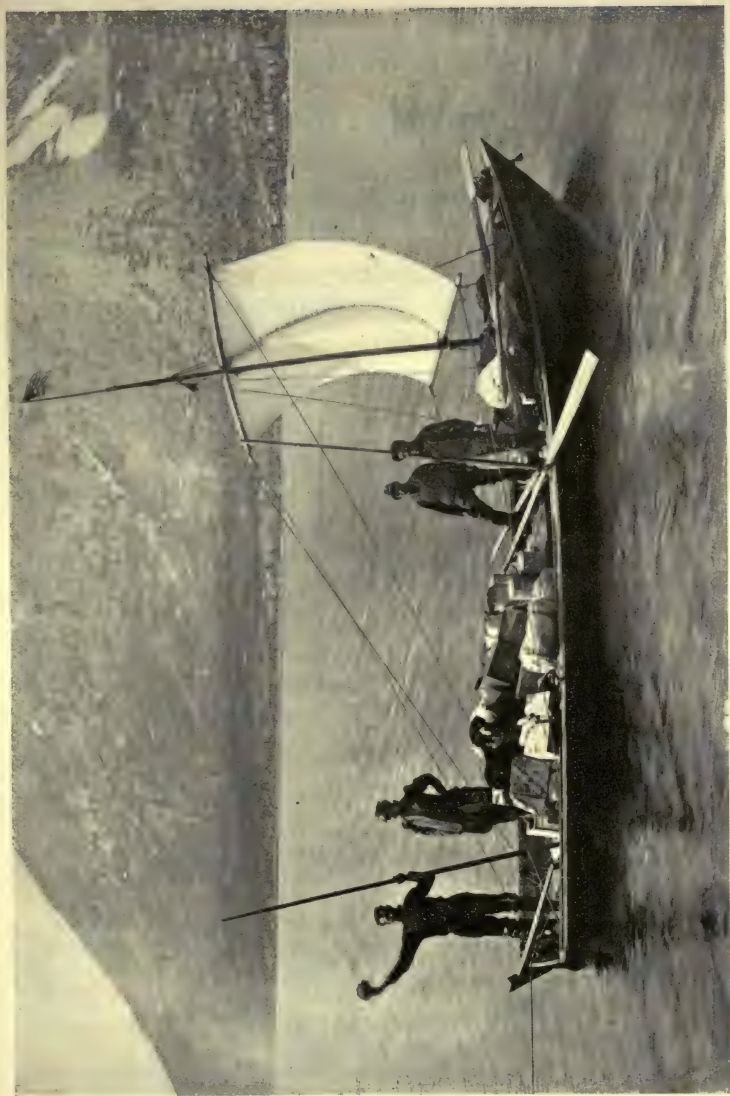
18,664 cubic feet per second. The Teslin-too (Hootalinqua), 575 feet wide, has a current of only 2.88 miles per hour, and its discharge (on August 31, 1897) was 11,436 cubic feet per second.

A word may here be profitable with regard to the nomenclature of the Yukon River. English geographers more particularly look upon the Yukon as a river in name that exists only below the Pelly, the stream above that confluence being known as the Lewes. Here, again, much the same relation holds as at the junction with the Hootalinqua, the valley of the Pelly appearing (and perhaps actually being) the larger of the two arms. The sectional discharge is, however, much the larger from the Lewes branch, and this being the case there is really no warrant for considering the Pelly other than a tributary to a main stream, which stream is the Yukon. The Pelly emphasizes somewhat the relations of the Stewart, Big Salmon, and Hootalinqua. Apart from the condition of simplifying geographical terminology, it becomes, then, a matter of simple justification of facts that the river in all its main course should be known by a single name; and however disposed one may feel to retain a name that has

already long suffered in geographies of various classes, it is certain that the tide of travel which in future is destined to associate itself with the upper course will establish for this course the name of Yukon. With its source in Lake Lindeman, or, more properly, in the smaller lakes—Deep Lake, Long Lake, and Crater Lake—which are situated some four to ten hundred feet still higher, the river has a total length slightly exceeding twenty-two hundred miles, thus ranking as one of the longest rivers on the globe, and sustaining by the quantity of water thrown out its claim to being one of the more powerful. It presents the anomalous condition of rising within twenty-five miles of the same ocean into which, after a course of over two thousand miles, it sees fit to discharge its waters.\*

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\* The question of Yukon terminology has been discussed by Dall, Dawson, Israel Russell, and C. W. Hayes, to whose writings the reader is referred for the special arguments that have been advanced in favour of individual views. Much the ablest presentation of the subject is contained Dawson's report on "Explorations in the Yukon District," published in the report for the year 1887-'88 of the Geological and Natural History Survey of Canada (pp. 14B-18B), which recognises the name Lewes for that portion of the stream which is found above the confluence of the Pelly; it may be said, according to this view, that the Pelly and Lewes unite to form the Yukon. There is good reason, it seems to me



An Argonaut craft of 1898.—Northward, ho!





At Cassiar Bar, a few miles above the confluence of the Big Salmon or D'Abbadie River, where a number of important diggings were being or had been conducted, we met with quite a "settlement," and among the queer craft tied up it was not difficult to pick out, by means of its conspicuously marked sheet, that of the noted ranger and scout Jack Crawford. He

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for dissenting from this view, which is largely held on a basis of prior usage of terms; but in a case of this kind, where a direct geographical construction is involved, the matter of priority should not be allowed to stand in the way of a condition, however much one may feel disposed to honour the writings of earlier explorers. Prof. Israel Russell (*Bull. Geological Soc. of America*, i, pp. 104-106, 1890), follows the map of the U. S. Coast and Geodetic Survey in applying the name Yukon to the upper stream (the Lewes of English and Canadian geographers); but for this upper stream he assumes the Hootalinqua (not to be confounded with Dawson's Hotilinqu), rising in Teslin Lake, to be the main source. If we are justified in sacrificing the principle of priority in nomenclature in favour of a method that is sanctioned either by rational unification or usage—and, following zoologists who are not hidebound in their views, I believe we are—then I prefer to follow the map of the Coast and Geodetic Survey, calling the entire stream from Lake Bennett, or Tagish Lake, to its mouth the Yukon; although, as I have stated in the text, the Hootalinqua and the Bennett arms might readily carry the names of "right" and "left" forks of the Yukon. Whether the Taku or the Lindeman arm of the left fork is the longest or largest is a matter of minor importance in locating the head-stream, and one that can not be solved at this day.

was representing some company of prospectors and would-be holders of mining property from up the river, but in addition dispensed various articles of necessity, comfort, or luxury from the storehouse of his scow. A sweet and sprightly little girl, who was fondling a manifestly agreeable but saucy type of dog as a *compagnon de voyage*, attracted me to this cabin, where my investments carried me to the extent of a dollar for a bottle of "condensed coffee," an article for which, while it may be very good, I had no use. It had the merit, at least, of bearing upon its device the statement that it was the latest preparation for the Klondike trade.

We passed the mouths of the Big and Little Salmon Rivers without accident, shot the narrow sluiceway between the high conglomerate rocks of the Five Finger Rapids with unerring precision, and bore down rapidly to the site of Fort Selkirk, almost opposite the inflow of the Pelly River. At this point the right bank of the river, for a distance of perhaps ten or twelve miles, is constructed of a series of horizontally superimposed lava beds or beds of basalt, the so-called Upper Ramparts. They rise sixty to two hundred feet or more above the water sur-

face, to which they present a virtually vertical face. In general character they reminded me of the basaltic beds which build up the plateau of the island of Disco, off the west coast of Greenland, and still more of the Swarten-Huk Peninsula. Over the level top surface runs what might properly be considered a continuation of the now famous Dalton Trail, whose actual terminus is the left bank of the river, about fifteen miles above the Five Finger Rapids, near the mouth of Nordenskjöld River and in the shadow of the great Tantalus Butte. This trail was represented to be in a fairly good condition at the time of our journey, as was indeed evidenced by the fine marching order of numerous pieces of cattle which we saw filing in Indian fashion over the heights.

Immediately below Fort Selkirk the Yukon, fortified by the Pelly, has a width, where unobstructed by islands, of nearly a third of a mile, with a depth of water ranging from six to ten feet, and the current continues relentlessly swift. Bars and shallows obstructed the channel at all odd points and passages, necessitating for us a frequent use of the sounding-pole, despite the significant fact that the Ora drew hardly more than two feet of water. More than once could

we hear the grating of the hull upon the gravelly bottom, but so long as we did not strike hard these minor incidents of steam navigation did not bother us. An endless series of windings and numerous islands complicate the channel of the river to a most marked extent, affording many disagreeable perplexities to the navigator, but at the same time showing up most decidedly to the advantage of scenery. Of the latter no one could complain, even if a certain monotony was beginning to be felt. The next marked confluence (ninety-six miles below Fort Selkirk) is that of the White River coming from the west, an important tributary born in Alaskan territory and bringing with it a vast discolouring discharge of white volcanic sediment and general mud, swept along in a current of about eight miles. This sediment gives the tone to the quality of the river water for the better part of the distance to Dawson.

On the right, ten miles below, we pick up the Stewart River, with its particularly merry camp of men and women prospectors; farther on the Sixty Mile River comes in from the west; then on the right again the Indian River, and finally the heavily wooded mountain hills, behind and between which are located the diggings

which have made the historic Klondike movement, appear to view and gradually unfold themselves. The badly-scarred volcanic knob that makes the back setting to Dawson looms up with beautiful effect above the river, and shortly after one o'clock of August 6th we tied up to one of the several piled wharves which break the water front of the San Francisco of the North.



### III.

#### SAN FRANCISCO OF THE NORTH.

A FIRST impression of Dawson, in August, 1898, could not be other than one calculated to bring up comparisons with strange and foreign lands. As we saw it, approaching from the water side, it persistently suggested the banks of the Yang-tse-kiang, or of some other Chinese river, on which a densely apportioned population had settled. Hundreds—one is almost tempted to say thousands—of boats were lined up against the river front, and so packed in rows back of one another that exit from the inner line was made possible only by a passive accommodation from the outside. There were steam craft, house boats, scows, and a variety of minor bottoms, ranging from the hay-packed raft to the graceful Peterboro canoe. Many had canvas spread over them, giving house quarter to those who preferred the economy of an owned estate to the high-priced cabins of log-huts and hotels, and the purity of the open air to what was

at least considered to be the polluted atmosphere of the stable city. It would be far from the truth to assume that this floating population was composed exclusively of men, women, and children; there were dogs galore, abundant by both presence and voice, horses and mules, and an occasional goat betrayed itself munching among hay-packs and the usual combination of simple and hard things which make up goat food. One canvas bore the tempting inscription "Hot and Cold River Baths," several carried legends of variously designated laundries, and a few even invited to "Board and Lodging, cheap." Of course, the word cheap had here a special etymologic significance, and bore little relation to the same form of word which is current in lexicons.

The first favourable impression of dry land in Dawson was tempered by a knowledge that even here were many moist spots. The mud lay in great pools along the main street—First Avenue or Front Street—but hardly in sufficient depth to make walking dangerous. Dogs and goats could alone drown in it. It is true that an occasional wading burro or even a mule would find a dangerously low level, but I am not aware that any in this condition had added

to a list of serious casualties. No mention is made in this connection of cats, for, in truth, only two specimens of the feline family had up to this time reached Dawson—one, a blue-ribbed kitten, which was endearingly received as the mascot of the Yukon Mining Exchange.

The Dawsonites are not entirely oblivious to the discomforts of mud, for an effort is being made to block it out with sawdust, of which the three or four saw-mills in the town furnish a goodly supply. In some parts a rough corduroy has been attempted, but the price of lumber, two hundred dollars per thousand linear feet, renders this form of construction too expensive for general use, especially in a community all of whose members, female as well as male, are prepared to stem the tide with high-top boots. About one half the street length shows the pretence of wooden sidewalks, but no one has yet recognised a special responsibility for repairs, or seemingly considered that a continuous walk requires a continuous support. Walking is a succession of ups and downs; boards are missing here, others are smashed elsewhere, and the whole walk gives the impression of having been in existence for



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Dawson and Klondike City (South Dawson) in September, 1898.





centuries rather than for the period of a short twelvemonth.

It was not difficult to determine what perhaps the majority of the sixteen thousand inhabitants of Dawson were doing at the time of our arrival. They were simply loitering, and the streets were packed with humanity. This was not strange, either, for it must have been difficult to resist the enjoyment of that open sunshine, that soft, warm atmosphere, which is the delight of the summer climate of the far North. Never had I experienced anything comparable, and others who had travelled much agreed with my experience. On my way to the hotel, the "Fair View," which had been strongly recommended for its *cuisine* and the circumstance that it was "brand" new in its appointments—having only come into existence a few days before—I caught a good general glimpse of the town, the dominant features of which were registered in the two sides of the main thoroughfare along the river front. A nearly continuous row of one-story, or at the utmost two-story, frame shacks or booths, many of them still in canvas form, and most of them supported over the river's bank by pile proppings, built up the river side of this First Avenue. All

manner of articles, both serviceable and unserviceable, for the Klondike business were displayed, mostly in cramped quarters. The variety of things that had in so brief a period found their way to this region was truly astonishing, and one marvelled at the mental ingenuity which spirited some of these articles to a *champ de vente*. Surely nothing but "manifest destiny" could have placed a mammoth's molar on sale for a hundred dollars, when it was thought that a period of starvation was reigning in the town. And yet almost alongside of it were posters announcing that four loaves of bread could be purchased for one dollar—in another place "six loves" for the same price—and that "half an ounce" of gold dust, the equivalent of eight dollars, would gain admission to the best seat witnessing a boxing and wrestling contest.

In addition to the booths doing a regular merchandise business, there were those whose masters ministered to a specialty—druggists and doctors, photographers, auctioneers, and brokers of one kind or another. "Bartlett Bros., Packers" served the inner core of the gold regions by means of long trains of pack-mules, but they were not the only ones to whom

the *cargador* was an officer militant. Dog teams there were as well as mule teams, and the majesty of the law was hardly considered invaded when the former effected a junction with man in the capacity of common carriers. One of the most interesting sights was to me the large number of letters awaiting ownership which were tacked up to the fronts and sides of different buildings, in the most public way petitioning for rapid delivery. My first letter in Dawson was obtained by stripping it from a door-jamb, but it was three weeks before my attention had been directed to it by a friendly discoverer. To obtain anything from the post office was a most exhaustive process, and usually required a long wait, sometimes of a day, or even of two days, before entry could be obtained into the small room where the sorting, distribution, and dispensation of mail matter were being effected. Even when finally issued, this matter was usually of several weeks' antiquity of arrival, the sorting of tons of substance being much beyond the capacity of the few official hands that were engaged in the work.

By far the most imposing side of the street was that which faced the river. Here, at least,

were real buildings. The stately depots of the Alaska Commercial and North American Trading and Transportation Companies, with their outer casing of corrugated iron, would have done credit to a town of larger capacity than Dawson, and in regions much more accessible to civilization than the Northwest Territory. Farther on, the signs of a number of well-built saloons—"The Dominion," "The Pioneer," etc.—attract attention, not by the supposition that they are alone in the business, since they are supported by probably not less than two or three score others of their kind, but by their specially distinctive interiors; one of these is embellished inside by a series of four mural decorations in oil or distemper, representing a range of subject from Morro Castle, Havana, to a "Moonlight on the Yukon," for which a resident artist "of promise," whose work was done in an open lot, received the handsome compensation of eight hundred dollars. They were befitting the place which they graced.

A more intimate acquaintance with these saloons made it plain that they were patronized both for the drinks which were sold over the bar for fifty cents or more and for the gaming tables which in open evidence betrayed a sur-





Some mud in the main street of Dawson.—First Avenue.





passingly strong interest in *faro*, *rouge et noir*, and roulette. Crowds were watching the fortunes of the play at every turn. From the front entrance quite to the rear some of the more favoured halls were packed, but with an element that seemed little disposed to disturbance of any kind. While the drinking of spirituous liquors is very largely indulged in, I believe that during all my stay in Dawson only three cases of obtrusive drunkenness were brought to my attention; and of riotism my experience was wholly negative. Life and property are considered safe even in the most doubtful establishments, and it is not uncommon for a man to pass hours in a crowded dance hall with virtually all his possessions, possibly a few hundred dollars, or it may be thousands, carried in the form of gold dust in his trousers pockets. Two main factors are involved in this condition of security or in the feeling that it exists. The first of these is, perhaps, a wholesome dread of the Canadian Mounted Police, whose efficiency in the direction of controlling order is conceded by every one; and the second, the circumstance that the inhabitants of Dawson and of the adjoining Klondike region are not, as is so largely supposed, a mere assortment of rough prospec-

tors, intent upon doing anything for the sake of acquiring gold, but a fair representation of good and indifferent elements borrowed from all professions and stations of life, and not from one country alone, but from nearly all parts of the civilized globe. During my brief stay I stumbled upon "counts," "sirs," military and naval officers, scientists, lawyers, newspaper men, promoters, and others of broad and liberal standing; and if some of these were undistinguishable in external garb from their brethren in mustard-coloured mackinaws whose sole resource was digging for gold, their polished and intellectual method was evidence enough that civilization was present in good quantity along the upper Yukon. The fact that there are three weekly newspapers published in Dawson—the Nugget, Midnight Sun, and Dawson Miner, the first two selling for fifty cents a copy and the last for twenty-five cents—can hardly be considered to prove this condition, although favouring it; for, though the substance and especially the typography of the journals are quite good, the demand for reading matter is such that almost anything could realize a subscription list. The long-belated New York journals seem to command a steady sale on the

news-stands, where one also sees displayed the small and (in our country) gratuitously distributed scenic books of the trans-continental railways put up for fifty cents. The *Argosy*, *Strand*, *Munsey's*, and *Cosmopolitan* were the ruling magazines during my visit, and each of these could be had for seventy-five cents a number.

Regretfully must it be said that the female portion of the population does not sustain the male either in character or diversity. I tried in various ways to ascertain the number of women who represented the community, but failed to obtain a satisfactory accounting. A large proportion of those who are in evidence, and perhaps even by far the greater number, belong to the "red" aristocracy, or at least to that side where steady principles are treated with little consideration and respect. I use the word aristocracy advisedly, for it is a notorious fact that an amount of deference is paid to these creatures of shame which is not given to the virtuous or self-respecting woman; and that they themselves, recognising their standing, are apt to look down upon the rest of their kin, and to even question their proper privileges. A large part of the broadly capacious Second Ave-

nue, together with equally conspicuous sections of the town elsewhere, is given up to the public display of the inmates of neatly-constructed log-cabins bearing such devices as "Saratoga," "Bon-Ton," "The Lucky Cigar Store," "Green Tree," etc. The number of open houses is probably less than in most mining camps, and far below what it is in some places. In deference to a demand tax of fifty dollars, levied on each member of the profession to pay part costs of two fire engines which had been brought to the town, there was a response of only sixty-nine, and this was considered a sufficiently close representation not to press the matter any further.

A community of this kind must necessarily have its dance halls and places of amusement. The latter consisted at the time of my arrival of four "theatres" or "opera houses"—the "Combination," "Monte Carlo," "Mascot," and "Pavilion," two of which suspended or closed up before the "season" had fairly opened. Ordinarily, the price of a drink at the bar of entrance paid for admission to the performance with seat, and many will agree with me in believing that the admission was fully paid. The acting need not be worse at any theatre, and the singing could hardly be surpassed in its ec-



centricities; yet the performances appeared to satisfy a general demand, as ordinarily the houses were packed to their full capacity evening after evening. Needless is it to say that the performances are not intended for women in good standing, and few such are ever present, unless heavily screened behind the curtains of the "boxes." The plays are all of a low order, but the worst is not much worse than some of the plays that are tolerated in all their nastiness in some of our own legitimate theatres. It is singular and interesting as showing the influence of necessity that a sacred Sunday concert in aid of the fire department was successfully carried through in the capacious halls of one of the most notorious dancing resorts.

There are now two banks in Dawson—the Bank of British North America and the Canadian Bank of Commerce. In the early days of August the first of these was still housed in a tent, and before the end of the month a stately wooden structure with flag-staff, and with commodious quarters for the representing officers and accountants, gave dignity to the institution, while it lent style to the corner upon which it was erected. Adjoining it now is the architecturally most imposing but by no means

largest building in Dawson—the three-storied, bow-windowed log-cabin of Alexander McDonald, the recognised “King of the Klondike”—intended primarily as an office building. It is a truly fine expression of the art of log-cabin building. In many ways one of the most interesting buildings, if such it can be called, was the air-space, with canvas top, which adjoined one of the theatres and was used by Signor Gandolfo for a fruit store. There was no architectural quality to commend this space; nor, indeed, was there anything else in its favour, except that it was in the right place and brought both lessor and lessee fortunes. For the privileges of this space of five feet width the occupant paid the handsome rental of one hundred and twenty dollars a month, or twenty-four dollars per single foot of frontage; his profits were, however, such as to justify this payment, and before leaving he confided to me his plan of renting one half of the establishment. Conceive of the character of a store five feet wide, the opposite sides of which are devoted to quite distinct interests! Other sites rent for very little less, and the singular part of it is that much of the rental goes to the pockets of certain assumed owners, whose actual rights are

largely in the nature of a "grab" or of squatter sovereignty alone.

Dawson extends up the river for about two miles, virtually coalescing with and taking in what has been euphoniously called Lousetown and also Klondike City. These more southerly parts carry with them certain characteristics which are either wanting in the main city or are there but feebly represented. The closely packed tents remind one of an army-gathering or of the furniture of some religious camp meeting; walking between them might almost be considered to be a branch of navigation. Inscriptions on the canvas tell us of certain "brothers from St. Louis" being occupants here, and of "The Jolly Four from ——" occupants elsewhere. Representatives of the press, physicians, and attorneys all have their inscriptions. But the most interesting constructions, picturesque as much as they are instructive, are the elevated platform caches, diminutive log-cabins, which on high stilts store a multitude of articles in safe keeping and beyond reach of the army of hungry dogs which are everywhere prowling about and carousing upon all manner of odds and ends. Their appearance, especially where they are placed among trees and bushes, is such

that the observer can hardly resist the feeling that he is travelling in a region of primitive pile-dwellings—it may be the interior of New Guinea or the forest tract of one of the Guianas.

Dawson, which now owns the right to celebrate its third anniversary, is destined before long to assume a modern garb. It already has its electric plant, and before many months have passed electric illumination will lift the burden of the dark winter night. It is believed, too, that an electric railroad for freight and passenger service will be constructed in the course of the present year into the heart of the adjoining gold region. The tiresome accounts of bad trails will then be a thing of the past. In its business aspects Dawson does not materially differ from the majority of the boom-towns of the United States, though of course it has its peculiarities. In the period of little more than a year it has gathered to itself, besides the usual class of merchants, representatives of a number of professions, such as doctors, lawyers, chemists, and assayers, most of whom, especially of the first two classes, appeared to be doing at least fairly well. Mine brokers, or simply vendors of claims, are numerous, but their service does not in most cases sustain confidence; the

# Combination Music Hall

NEXT WEEK! NEXT WEEK!

## Edison's Latest

## THE PROJECTOSCOPE

Life Size Moving Pictures, All the Latest War Scenes, the Battle of Manila, Destruction of the Maine, the Fall of Moro Castle, Etc.

### Mulligan and Linton's two act drama

## “Brocky Morgan,”

## The Mountaineer

# The Mascot Theatre

FRONT STREET., OPPOSITE P. O.

## HIGH CLASS

## VAUDEVILLE

GO ONCE      GO OFTEN

**CAVANAUGH & CO.,**

Managers.

All kinds of

## Souvenir Jewelry

Made to order

### Fine Watch Repairing

JOS. MAYER & BROS.

First avenue

## SANDERS & KING

## The Pioneer Painters

## SIGNS

## Paperhanging and Painting

# ST. MARY'S HOSPITAL.

**In Charge of the Sisters of St. Anne**

**Tickets Good for one Year, covering all expense in time of Sickness, \$50.**

Day patients, \$5.00 per day, for nursing,  
board and Washing. Doctors'  
fees, \$5.00 per visit

**FATHER JUDGE, Superintendent**

Facsimile of part of Yukon Midnight Sun, September 3, 1898.





display of posters announcing "bonanzas" in mining properties may be effective at times, but ordinarily the investor turns either to the Mining Exchange, a reasonably well-conducted private enterprise, or to claim-holders on the ground. The auction of claims at the Exchange was always largely attended at the times of my visits, and the bidding was frequently very spirited. The allowance of a time limit of ten days in which to make an examination of properties purchased and of the titles thereto before payment, beyond a forfeit of ten per cent, was exacted, naturally inspired confidence in the method of the transaction, and there is no question that a considerable number of good properties were parted over the boards here, and with eminent satisfaction to the purchasers.

The practice of medicine is necessarily governed by the laws which are in effect in the Dominion of Canada, and it requires the possession on the part of the practitioner of a diploma properly accredited from some recognised college of medicine in Canada. Graduation with diploma from the best medical schools in the United States is not considered to meet the requirement—nor, for that matter, is the diploma of any but a British school. This re-

striction also applies in the case of professional trained nurses. A number of cases closely bordering on litigation, and at one time even threatening to bring about international complications, have arisen in connection with practice violating this law; but despite the overwhelmingly large number of foreigners who are resident in the region, and who, it was thought by some, had the right to consult practitioners of their own nationality or choice, there is now a peaceful submission to the reading of the statute. The exaction is in no way intended to legislate against foreigners, but is simply a provision of the Dominion laws, similar to that which requires a "Dominion surveyor" who intends doing official survey work in British Columbia to be properly accredited with a special paper of that section of Canada (as distinguished from the Northwest Territory, etc.). Like the physicians, all surveyors giving out work under their names must be officially licensed from the Dominion, although those not thus certificated are permitted to do office or field work for others who are.

A field of labour that has already been entered upon by women is stenography and typewriting. There has been considerable demand

for this kind of work, and there will continue to be much more, but it may be doubted if profits arising from it will ever equal what has been attained in millinery and the sale of fancy dress goods. One of the earliest milliners to come out from Dawson told me at Bennett that she had disposed of a hat which brought her two hundred and eighty dollars (in April, 1898), and its only ornamentation was two black ostrich feathers! Such prices are to-day a thing away in the past, but fur capes or circulars are still marketable for three hundred dollars and upward.

Toward a more intimate acquaintance with the methods and lines of business now followed in Dawson we subjoin a facsimile of portions of the advertising page of the Yukon Midnight Sun, bearing date of September 3, 1898:

#### IV.

### THE SITE OF DAWSON: ASPECTS OF NATURE IN THE FAR NORTH.

THE traveller or prospector who steers his course in the direction of Dawson and expects, when arriving there, to be thrown into a region of inhospitable barrenness, of desolate, treeless wastes, and great expanses of tundra, will, on the completion of his journey, experience a rude shock to his geographical conceptions; if he has prepared to battle with an interminable host of mosquitoes or of other small adventurers of the atmosphere, such as have been described and pictured of other parts of the far North, he is almost certain to be pleasantly disappointed. I confess to pleading guilty in both directions; and the more surprising may appear my mistaken notions, considering that two of my earlier summer vacations had been passed in latitudes nearly a thousand miles further north than the banks of the Yukon, and many corrections to geographical knowledge had to



**ATTORNEYS AT LAW.**

**C. M. WOODWORTH, M.A. LL.B.**  
 Advocate, Solicitor, Commissioner,  
 Notary, etc.  
 Five years' practice in Northwest Territory  
 Office opposite the New England

---

**WADE, CLARK & WILSON**  
 Members of the Canadian Bar.  
 Advocates, Attorneys, Solicitors Notaries.  
 Conveyancers  
 Office, Rutledge Block, First Street, Dawson  
 P. C. Wade O. H. Clark H. G. Wilson

---

**C. W. C. TABOR**  
 Barrister and Solicitor  
 Advocate  
 Notary Public Conveyancer

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**BURRITT & McKAY**  
 Advocates,  
 Solicitors, Notaries, Commissioners, etc.  
 Constables for Ontario, Quebec and British  
 Columbia.

---

**PHYSICIANS AND SURGEONS.**

**DR. W. T. BARRETT**  
 Late Superintendent St. Boniface Hospital, Win  
 nipeg.  
 Physician and Surgeon to St. Mary's Hospital.  
 Office Rutledge Block, Front street.  
 Office hours—From 11 a. m. to 6 p. m.; at Hospital  
 from 8:30 to 10:30 a. m. and 7 to 9 p. m.

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**W. E. THOMPSON, M. D., C. M.**  
 Lic. Royal College Physicians & Surgeons, Edin.  
 Faculty " " Glasgow  
 Memb. College " " Quebec  
 " " " " Gt.  
 " " " " Man.  
 " " " " N. W. T.  
 Late city medical health officer and coroner for  
 province of Manitoba  
 Office near N. W. Mid. Police Reserve

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**J. A. SUTHERLAND, M. D., C. M.**  
 L. C. P. & S., Ontario  
 Physician and Surgeon.  
 Late of Toronto, Ontario  
 Office, Pioneer Drug Store, Up Stairs.

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**DENTISTS.**

**DR. J. W. REED**  
 Dentist  
 Special attention given to all kinds of fine gold  
 work including crown and bridge work  
 No. 144 First avenue

**Klondike Hotel**  
 NELSON & SMITH, Props  
 —O—  
 Finest Brands Wines, Liquors and  
 Cigars  
 Front street south

---

**Yukon Sawmill Co.**  
**Lumber**  
 Best grade  
 Lowest price  
 House Logs Sawed to Order or  
 Sold from Stock  
 —O—  
 Office on Front street and Second avenue

**Gold Dust**  
**Bought**  
**for Cash**

**ALBERT HANSEN, Jeweler**  
 706 First Ave., Seattle, Wn

**Seattle-Yukon**   
**Transportation Company**  
 (Four Leaf Clover Route)  
 W. D. Wood, President, A. L. Hawley, Vice-  
 President, Charles H. Norris, Traffic Manager  
 90 - 92 Columbia St., Seattle  
 Seattle No. 3 and barges will leave Dawson  
 for St. Michael and down-river points on or about  
 Aug 28th, and make connection with our A.  
 S. S. Alliance for Seattle  
**Pacific Alaska Express Co.**  
 Operates over our line and handles  
 express matter for all points.  
 Orders for freight coming in will be handled  
 promptly - Goods insured and stored at Dawson  
 and down-river points 30 days free of charge.  
 This enables miners to prospect with a light  
 outfit and call for their goods when permanent  
 camp is located. We are the only established  
 company carrying freight for shippers to the  
 various points on the Yukon For rates and  
 other information, call on  
**H. Te Roller**  
 Library Building Dawson

**French Royal Restaurant**  
 Renovated and New  
 Go there for a square meal Nothing but the  
 very best served and cooked by a culinary chef.  
**P. E. De Ville, (French Pete) Prop.**

**ARCTIC MEAT CO.**  
**G. G. BERG, Mgr.**  
**Fresh and Salt Meats**  
**All the Market Affords**  
 Wholesale and Retail  
 Front street Dawson

**HART & CATES**  
**Furniture and Upholstering**  
 All Kinds of Bedding, Mattresses, etc.  
 Second avenue, Opposite Bank of British N. A.

**The Pioneer**  
**Blacksmith Shop**  
 GEO. McCORD, Prop.  
 General Blacksmithing and Machine Work  
 Jobs performed to meet General and Mining need  
**Steel Drills and Picks**  
 Made Especially for  
**Frozen Ground**  
 Four Years of Alaska Experience  
 Second avenue, Bet. Second and Third streets

**HART & CATES**  
**Undertakers and Embalmers**  
 Special attention given to shipping  
 remains to their former homes.  
 Second avenue, Opposite Bank of British N. A.

**Louis Seekels**  
**ASSAYER. General Assay.**

Facsimile of part of Yukon Midnight Sun, September 3, 1898.



be forced into me even there; but experience seemingly counts for little beside the overwhelming testimony of the casual traveller and the little-observant writer.

As nearly as can be now stated, Dawson lies on the Yukon, 1,659 miles above its mouth. At this point the river is still approximately 1,400 feet in elevation above the sea, consequently it falls somewhat less than one foot to the mile as an average descent to its mouth. In its upper course the descent is more rapid, the fall from Lake Lindeman to Dawson, in a distance of about 540 miles, being nearly 800 feet. The right bank of the river, on which nearly all of what constitutes Dawson is situated, is here carried back into an extensive flat or flood-plain, soggy and boggy to a high degree, which breaks abruptly into the water with an elevation of some eight to fifteen feet. A bold volcanic knob, rising perhaps a thousand or eleven hundred feet above the water, and beautifully wooded or covered with herbage for most of its height, delimits this plain, and its abrupt plunge into the river just below the town determines the extension of settlements in that direction. Already over its long southern slope, lining what is now commonly designated Bo-

nanza Avenue, an assemblage of neat and well-constructed log-cabins has taken possession of the hillside; for here is a location that is at once charming in its picturesqueness and healthy in both soil and air. The prosaic quest for gold has not in all cases dulled man's sensibilities for the refined and æsthetic, and we find him cultivating the arts of peace and contesting in friendly rivalry with his neighbour for the neatest cottage or the most ornamental display of verandas.

A volcanic mass, very similar to the one on the right bank and manifestly a part of the same disturbance, is also found on the left, the two forming what has not inaptly been called the "portals of the river." On each are clearly marked out the lines of superimposed terraces which define the ancient levels of river-flow, and so beautifully follow the course of the stream far as the eye can reach. No more perfect presentation of such terraces can be found anywhere than on the Yukon, where for hundreds of miles, almost unbroken, they constitute one of the most striking features in the landscape. Almost immediately after my arrival in Dawson I ascended the knob on the right, and from the summit obtained a most extensive and instruc-

tive view of the ancient water-levels, for not alone were those of the main stream unfolded in all their regularity, but equally so those of some of its near neighbours or tributaries, such as the Klondike and the Bonanza. Far and wide the earlier waters extended, and away up to the top summits they carried their water-worn pebbles. I suspect that the high level has been determined in part by comparatively recent bodily uplift, but the evidences that we were able to obtain on this point were not conclusive, and are, in fact, in a measure contravened by the configuration of the relief of the Klondike gold region.

A bald basin-scar occupies about one third of the upper height of the mountain, and tradition has it that its making comes well within the recent period, and that beneath the crumbling *débris* of rock which so prominently defines the landslides lie buried still to-day the frames of some fifty or sixty Indians. At the base of the slide an enormous mass of separated boulders of serpentine, chloritic rock and diabase have accumulated, the whole looking like a great disintegrated lava-flow and forming a sort of natural terrace impending over the river. The slide was manifestly determined by



the giant dike of serpentine which enters as a core into the construction of the mountain.

From these heights the eye wanders northwestward over a most lovely stretch of river, with hillsides closely besetting it and with a vegetation of most striking brilliancy and vigour. Here and there an accumulation of white flecks tells of a settlement of prospectors, and the tall columns of white smoke that at intervals rise through the green of the forest read the same story. From afar, perchance, the ear catches coming the dull boom of forcing steam, and, if we watch the landscape sufficiently close, we are not unlikely to detect as parts of the shifting panorama one of those strange craft which to-day, to the number of fifty or more, constitute the fleet of Yukon steamers. The distant mountains are considerably higher than the one upon which we stand, but they are yet only foothills of the mighty range of the Rockies which lie farther beyond. We should like to peer behind them, for we know that the possessions of the United States lie only forty miles away; but their heights close out the landscape, and the mind is left to wonder.

Southward from Dawson the landscape changes somewhat, but not materially. The

river, after a mile or more, is sharply deflected around its buttressed shores, and the eye loses all but the beautiful verdant slopes which still mark out the valley. Near to us the Klondike has broken through the long shoulder of the volcanic uplift to join its turbulent waters with those of the swiftly moving Yukon, and into its bosom falls—a dream of quiet beauty—the far-famed valley of the Bonanza. We follow it for miles along its course, thinking to catch a glimpse of the Eldorado, but the wooded slopes narrow the contours, and only a hazy distance tells us that there is still a land beyond. The mountain heights rise to two and three thousand feet—bold knobs in places, but generally with their slopes washed to gently undulating contours—evidence of the ages which were involved in their degradation.

For hours at a time could I sit watching the exquisite beauty of the landscape, and to one endowed with a proper appreciation for the works of quiet nature it would be difficult to recommend a more enjoyable exercise than to take in a bit of this wonderful land of the North, and with it a mellow sunshine that is not to be found elsewhere. The jays and cross-bills are gambolling in the thickets back of you, the

merry hum of the saw-mill breaks the stillness of the day below; but far and off a peace and quiet reign impressive by their silence. With a claim to having seen many distant lands, I can truthfully say that never before had it been my fortune to experience such a succession of wonderful summer days as during my stay in the region about Dawson.

From August 6th to September 20th, barring three days of partial rain, and perhaps a fourth of cloudiness and mist, the weather was simply perfection—a genial, steady, mild summer, with a temperature rising at its highest to about 80° or 82° F. in the shade. Even at midnight in September the mercury at its lowest did not fall below about freezing. In August, when daylight hung well on toward the midnight hour, the evenings were but little less pleasant than the days, the balmy night air rarely necessitating clothing warmer than that which was ordinarily worn. “Old-time” residents tell me that there had been continuous fine weather since June, and that already in May, when the waters of the Yukon were running freely with ice, spring had been well ushered in with sunshine and warmth.

Not having access to any official registry of

the thermometer, I am not in a position to state just what the extremes of the region are. Probably the highest good shade would show about  $90^{\circ}$  or  $92^{\circ}$  F., perhaps a degree or two more on exceptional days; I attach little value to the statement, contained in a brochure published by the United States Geological Survey,\* that at Fort Yukon, directly under the Arctic Circle on American territory, the mercury has been known to register  $112^{\circ}$  F. in the shade. The highest that was observed by me in the northern Sahara, in the latter part of August, 1896, the hottest month of the year for that region, was only  $116^{\circ}$  F., and it would require more than passing evidence to convince me that these most diversely placed regions enjoyed equal extremes of heat. On the other hand, I think it quite true that a given temperature in the far North impresses one with being of greater intensity than in the South, and recall how very warm a shade temperature of only  $74^{\circ}$  F. felt on my first trip out on the Bonanza trail. It may be interesting to note in this connection that the highest temperatures recorded by Mr. Peary at a point in the northwest of

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\* Map of Alaska, with Descriptive Text, 1898, p. 10.

Greenland, about nine hundred miles farther to the north, were, in the journey of 1891-'92, 52° F. on August 19th, and in 1893-'94 59° F. on August 13th. On the other hand, I am informed by a communication received from Mr. Thomas R. Hill, the leader of an expedition on the lower Yukon River, 1898, that the thermometer on one occasion, in the latter part of July, registered 104° F. in the saloon of the expedition steamer; no statement is, however, made regarding the conditions under which this reading was made. Perhaps the highest satisfactorily recorded temperature for the far North is that noted by Baron von Toll, who, in his remarkable journey over the arctic lowlands of Siberia in 1893, experienced, on the borders of the icy sea between Bulun and Khatanga Bay, in latitude 72° N., the extraordinary heat of 93° F.

As regards the winter climate of Dawson and the Klondike, it would be futile to attempt to argue away an exceedingly low temperature. At the same time it may be taken for certain that the extreme low range of the mercury, — 70° to — 75° F., which has so often been "officially" claimed for the region, has never been recorded from a really reliable thermometer.





The main street in a spring freshet.



My own examination of what seems to be most reliable testimony would lead me to believe that the lowest registry of the thermometer was— $53^{\circ}$  or— $58^{\circ}$  F., the same that Mr. Peary experienced in the far north of Greenland, and even this was an extreme. From  $-20^{\circ}$  to about  $-40^{\circ}$  or  $-45^{\circ}$  F., appears to be the dominant cold of the coldest months. Very remarkably, nearly the coldest days that have yet been recorded were days in the latter part of November (1897 and 1898). That some of the inhabitants would wish the cold to appear colder than it really is, and approximate more nearly to that of Verkhoyansk and Yakutsk in Siberia, is indicated by the character of some of the instruments that are used for making their determinations. During my stay a thermometer registering to  $-90^{\circ}$  F. was put out on sale, and, doubtless, next year we shall hear of a temperature of that extreme having been registered. On the other hand, most of the Dawsonites are inclined to make light of the winter's cold, and assure you that, except for head and foot wear, they take little stock in that over-burdening with heavy clothing which outfitters so delight in foisting, as "absolute necessities," upon the too credulous tenderfoot. A good quality of warm under-

clothing, moderately heavy woollen overgarments, such as are worn in civilized parts of the United States and Canada—as in Minnesota or Dakota, or in Montreal or Quebec—and a Russian “parkee,” as a protection against possible wind, are the essentials for good keeping and the potentials of work. The much advertised mackinaws, which by judicious soliciting have brought to themselves a very general distribution, are condemned as articles of winter wear, beyond answering as moderately warm or comfortable pieces of clothing. I noticed that furs were used in but insignificant quantity, and the much-vaunted sleeping bag was very generally replaced by a good outfit of double blankets. The ears, nose, and toes are the articles of tender mercy which have to be specially guarded, for they have a method of leaving one without putting out anticipatory signals of distress.

In the shortest day of winter there are still two hours of sunlight, and of course considerably more of after-glow illumination. Many seem to believe that the winters here are of arctic darkness, daylight being blotted out for weeks at a time, and they fail to realize that Dawson, and with it the Klondike region, situ-

ated roundly on the sixty-fourth parallel of latitude, occupy a position not quite 300 miles north of that of St. Petersburg, and Archangel is really some thirty miles nearer to the Arctic Circle. This comparison must not, however, be assumed to extend equally with regard to temperatures, as Russian towns enjoy much milder winter climates than equivalently placed localities in the Northwest Territory. Thus, the mean January temperature of Moscow is as high as  $12^{\circ}$  F.: of St. Petersburg,  $16^{\circ}$  F.: and of Archangel,  $8^{\circ}$  F. On the other hand, at Yekaterinenburg, in latitude  $56^{\circ} 49'$ , this temperature has been reduced to  $3^{\circ}$  F. Compared with the extremes of cold noted at Yakutsk ( $-88^{\circ}$  F.) and Verkhoyansk ( $-93^{\circ}$  F.) in Siberia, the climate of Dawson does not sustain itself for extreme cold.

The following report on temperatures, made at Fort Yukon, just within the Arctic Circle, which is embodied in an official communication to the Secretary of War by Lieutenant Richardson under date of July 7, 1898, and covers the period from November, 1897, to May, 1898,\* conveys a reasonably accurate idea of the cli-

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\* Transmitted to Congress February 19 (18th?), 1899.



matic conditions prevailing at Dawson in winter and spring.

For the month of November, with the reading taken at 8 A. M., an average temperature of  $18^{\circ}$  F. was found; for December —  $8^{\circ}$ ; January, 1898, —  $24^{\circ}$ . “The coldest single day was January 16th, when the thermometer registered —  $62^{\circ}$ . The coldest period of seven days was from February 16th to 22d, inclusive, when the thermometer showed an average of  $50\frac{1}{4}^{\circ}$  below. No severe weather was experienced after the end of February.” The lowest readings of the thermometer for the ten days included between February 14th and 23d were  $40^{\circ}$ ,  $48^{\circ}$ ,  $52^{\circ}$ ,  $52\frac{1}{2}^{\circ}$ ,  $42^{\circ}$ ,  $52\frac{1}{2}^{\circ}$ ,  $54^{\circ}$ ,  $42^{\circ}$ ,  $56^{\circ}$ , and  $38^{\circ}$  below zero F. The conditions prevailing at Dawson are measurably less extreme, and certain remarkable peculiarities were presented by the winter season of 1898-’99. I have already stated the condition of the weather up to the time of my leaving, September 20th. Consul J. C. McCook, in a brief consular report, states: “The weather during September has been very moderate, reminding one of Indian summer in our own country.” On December 6th, 7th, and 8th, when the thermometer at its lowest stood at  $+38^{\circ}$ , the Klondike was visited by heavy rains, and

raging torrents, formed of the melting snows of valleys and hilltops, threatened a broad destruction. A few days earlier, December 2d, on the coldest day of the week, the mercury, had descended to  $-19.2^{\circ}$  F. This condition recalls the remarkable rainfall which visited the region of Mr. Peary's camp on McCormick Bay, in the northwest of Greenland (latitude  $77^{\circ} 43'$ ), in the early days of February 1892.\*

Contrary to the first belief of steamboat men—grounded on earlier experience—that the navigation of the upper Yukon would be finally closed in the second week of September at the latest, or the fears of those who like myself left Dawson on the 20th, or still later in the month, the river was sufficiently high and open for passage as late as October 20th, when the little steamer Ora brought out a final cargo of freight and passengers. Little or no ice was encountered on the Yukon below Lake Marsh, and only scale ice was visible around the shore of Lake Bennett. Lake Tagish was entirely clear.

Judged by the condition of the year previous, when the river was solidly blocked with

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\* During the first twenty-five days of January, 1899, the mercury in Dawson on nineteen days descended to  $-25^{\circ}$  F. The lowest reading was  $-45^{\circ}$ , on January 25.

ice before the close of September, it is not impossible that the year 1898 may have been an exceptional one as regards the duration of mild weather. Only a knowledge of many successive years can determine this point, however, and at the present time the history of the region is not sufficiently old to permit of the inquiry. Up to the time of my departure from Dawson no snow had fallen to the ground, and the hilltops were only covered once, and then merely with a thin crust. Advices that have been received since my return indicate that the first basal snow fell on the 7th of October, but in such small quantity as to melt away in the course of the next twelve hours. What the amount of winter snow-fall is has not yet been definitely ascertained, but all accounts point to it as being of inconsiderable extent, partaking in this respect of the condition of most other regions of dry and extremely low temperatures. The snow is described as being of a peculiarly fleecy or flocculent character, packing only with difficulty, and therefore not adapting itself to road-making with the facility of our warmer southern snows; but its even "blanketing" makes excellent sleighing, and the dog-team service is then used with good and pleasure-giv-

ing effect along the natural highways of the different streams.

Auroral displays were common in the early and middle days of September, and their exquisite development never failed to attract the attention of the loiterers on the streets. In triple and quadruple arches, the magnetic effulgence swept the heavens from horizon to horizon—signals, as they are interpreted by many, of impending cold. They followed almost nightly during the last two weeks of my stay, arching from a gentle southeast to northwest. Although brilliant in illumination, they lacked somewhat of the golden and pink tints which distinguished similar displays that I had before seen off the coast of Labrador and between it and Greenland.

In crossing over the high divide which cuts off the head waters of the tributaries of the Klondike from those of the Indian River, on what is locally known as Dome Ridge, I sat me down in a patch of herbage of which the blueberry formed the most conspicuous part. The elevation was possibly somewhat over 3,500 feet, and the summer days had reached the middle of August. Sixty miles away the main mass of the Rocky Mountains rose up a solid

bulwark against the northeastern sky, while immediately about me and on all sides were the props, crests, and wooded valleys which together make up the knot of the Klondike Mountains. Sulphur and Quartz creeks could be traced by their deep valleys one on one side, and Hunker, Gold Bottom, and Carmack's Fork of Bonanza by similar features on the other side. The position was virtually above tree line, but a few remaining specimens of gnarled evergreens and an occasional reminder of cottonwood and birch told me that the zone of woodland had been left but little behind.

What particularly interested me on this occasion more than the determination of the timber line was the bed of blueberries. Having left the road house of "upper discovery" on Dominion Creek at an early hour and travelled pretty hard over the steep face of the mountain, the possibility of joining with a keen appreciation of scenery several mouthfuls of native berries was accepted with good grace. The berries were not the best of their kind—a reminder of the crowberry (*Empetrum nigrum*) of the north of Greenland, but they supplied a temporary want with full satisfaction, and had there been a deficiency in the article there cer-





Junction of the Klondike with the Yukon.



tainly would have been a craving after more. There was no such want. Patch after patch was teeming with the pale blue berry, and the tiny plant that supported it had all it could do to make itself visible under the burden of its fruit. To the conception of a hopelessly barren region, with cold bleak winds blowing across snow-rimmed rocks, this picture of warm sunshine, of verdantly clad hills and dales, and of an abundance of fruit sufficiently delicious in its way was a penetrating contrast.

At many points along the trail, more particularly on the moist downward slopes of the wooded hillsides, a diminutive mountain cranberry grew in neighbourly association with the blueberry, and it too was in fruit at the time of my visit. Many profess to like it, but I confess that it inspired me with little enthusiasm, except in admiration of the beautifully tinted flowers and the bright green of the foliage. In this capacity of a colour decorator the plant could have taught a sober lesson to the exponents of impressionism in art. In this country one soon learns to appreciate the value of colour in a landscape, and there is at times an amount of it that is almost bewildering in its variety and intensity. A lovelier colour pan-

orama than that which was presented by the Yukon at Dawson during the short period of the "sere and yellow leaf," in the first two weeks of September, can hardly be conceived. There was not that intensity of red which we associate with the maple woods of the South. but of golden yellow the exhibition was matchless. The cottonwood and birch were suffused with yellow sunlight, and they gave the tone to the landscape. The hillsides were simply gorgeous in their wealth of colour, and it detracted nothing that this colour was reflected back from the mirrored surface of the river.

It was a source of much regret to me that my journey was timed for a period following upon the full flowering of the wild rose. Most of the blossoms had already fallen, but their abundance was still such as to give an inkling of what the display must be at the proper time of flowering. Along some parts of the upper Yukon the rose bushes are so thick that they actually form the carpet to the soil, and I am told that large areas of the deeper interior are similarly covered. Nobody as yet seems to know of the possibilities of the land, and of course the length of time during which it has

been put to the service of man is much too brief to permit of more than the vaguest speculations regarding it; but it can safely be assumed, it seems to me, that more will grow and fructify than is generally believed, the long summer days of heat and sunlight largely compensating for the abbreviated season of growth. I have seen experimental patches of oats and barley, 250-300 miles south of Dawson, which in healthy stocks and maturing grain leave no doubt that in at least some parts of the region the cultivation of cereals can and will be carried on with success. Potatoes (with partial result), turnips, cabbages, lettuce, barley, and oats have been for some time cultivated at Forty Mile and at Fort Selkirk, and the experimental vegetable gardens, which are to-day already occupying a few of the favoured spots immediately about Dawson, show that when the conditions obtaining there will be better understood and controlled a similar success will reward the resident agriculturist. A strikingly refreshing garden, smiling in the fresh green of its lettuce, peas, and radishes, overlooks the Klondike just outside of Dawson. Grass stems measuring fully six feet and more in height are no rarity in this tract, and prospectors refer most



enthusiastically to the grass country of the upper Stewart River.

In a recent report on the agricultural possibilities of Alaska (April, 1898) Dr. Walter H. Evans, Botanist of Experiment Stations of the United States Department of Agriculture, thus refers to the grasses of the territory: "Next to the timber, perhaps the grasses of Alaska are among the most valuable of the plant products. In all parts of the country they flourish to an extraordinary degree. In southeastern Alaska, wherever the timber is cut away and the undergrowth of the shrubs kept down, a dense growth of grass soon takes place, to the exclusion of all other plants. Of the common grasses timothy (*Phleum pratense*), Alaska red top (*Deschampsia cæspitosa*) and *D. bottnica*, blue grass (*Poa pratensis*), orchard grass (*Dactylis glomerata*), wild barley (*Hordeum boreale*), *Calamagrostis aleutica*, and wild rye (*Elymus mollis* and other species) are the most widely distributed, and are probably the most valuable for pasture and hay. Timothy, orchard grass, and blue grass have become thoroughly established and grow to great size. One of the most common native grasses is the Alaskan red top. It is a prominent factor in nearly all grass mix-

tures, and frequently exceeds a man in height." \* Good hay grasses have been obtained from the vicinity of Circle City that were more than six feet tall.

Professor Dawson best sums up the potentialities of the climate and agricultural prospects: "In its southern portion (in which the Klondike region lies), situated between the sixtieth and sixty-fifth degrees of latitude, is comprised a region of probably not less than thirty thousand square miles, suitable for eventual agricultural occupation and presenting none of the characteristics of a sub-arctic region which have, in advance of its exploration, been attributed to it. The winter climate of the whole of this great region is known to be a severe one, but it must be remembered that the climatic conditions on the eastern and western sides of the continent are by no means comparable, and that the isothermal lines, as already approximately drawn upon the maps, represent in a generalized form the aggregate of the influences which, working together, produce at the site of old Fort Selkirk, on the sixty-third parallel of latitude in the upper Yukon basin, an attrac-

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\* National Geographic Magazine, ix, p. 181.

tive landscape decked with well-grown forests and with intervening slopes of smiling meadow, while in the same latitude in Hudson Strait we find even at midsummer merely a barren waste of rocks and ice."

With more particular reference to its agricultural possibilities, Dawson draws a picture of comparison between this region and the district of Vologda in European Russia, which, in approximately the same latitude, supports a population of a million and a half, although wanting in mineral wealth. "Taking into consideration all the facts I have been able to gather, as well as those to be derived from an examination of the natural flora of the country and the observed advance of vegetation, I feel no hesitation in stating my belief that such hardy crops as barley, rye, turnips, and flax can be successfully cultivated. Taken in conjunction with the physical features of the region, this means that there exists an area of about sixty thousand square miles of which a large proportion may, and doubtless in the future will, be utilized for the cultivation of such crops, and in which cattle and horses might be maintained in sufficient numbers for local purposes without undue labour, as excellent summer grazing is to be found

along the river valleys, and natural hay meadows are frequent.

“I do not maintain that the country is suitable for immediate occupation by a large self-supporting agricultural community, but hold that agriculture may before many years be successfully prosecuted in conjunction with the natural developments of the other resources of this great country.” The predictions of Dr. Dawson are amply justified by the facts and we see a partial confirmation at this early day. Already, as early as 1885, in his report on Alaskan explorations, Lieutenant Allen had expressed himself as follows on the possibilities of agricultural development: “I believe that lettuce, radishes, turnips, beans, peas, potatoes, carrots, and possibly buckwheat and barley can be raised in favoured localities on the middle and upper Yukon and Tanana. The climatic conditions of the coast do not prevail here; there is not as much humidity. . . . The summers, though short, are very hot. The sun is almost continually above the horizon, and the thermometer has been known to read  $112^{\circ}$  and  $115^{\circ}$  F. Although the soil usually remains frozen the year round at a depth of one or two feet below the surface, this would not neces-

sarily interfere with agricultural pursuits. By cultivation and proper drainage the distance of the ice bed below the surface would be considerably increased."

I have had occasion to notice the native strawberry, described as a delicious fruit, which is found in abundance in many parts of the Yukon Valley. It at first seems strange to meet with a good quality of this fruit so far north, but, after all, the strawberry is largely a northern plant, and those who know the wild berry from the forests of Poland and northern Russia will hardly be surprised to come across it here, and, whatever way considered, its presence will occasion much less surprise to the non-naturalist than the occurrence, even in fair abundance, of one or more species of hummingbird in the valley of the Skaguay. In the region of the recently discovered gold fields of Atlin, about eighty miles northeast of Skaguay, report pays a high tribute to the quality of the gooseberries and currants growing there in wild profusion. The entire tract is represented to be a veritable flower garden, singularly beautiful in the disposition of its arboreal and herbal elements. The undergrowth is so scanty that penetration by horse is easy, and even a wagon





A summer day on the Skaguay.



course is possible in parts where there is no trail.

In the report already referred to by Dr. Evans the following reference is made to the Alaskan berries, with more particular application to the southern coast: "The flavor of most Alaskan berries was found to be excellent, and some of them might be worthy of introduction into the States. Of the berries which have widest distribution may be mentioned the salmon berry (*Rubus spectabilis*), two kinds of cranberries, the high bush (*Viburnum pauciflorum*), and the little cranberry (*Vaccinium vitisidæ*), the red and black currant (*Ribes rubrum* and *R. laxiflorum*), crowberries (*Empetrum nigrum*), huckleberries (*Vaccinium uliginosum* and its variety *mucronatum*), raspberries (*Rubus strigosus*), elderberries (*Sambucus racemosa*), bunchberries (*Cornus canadensis* and *C. suecica*), and the 'Molka' or baked-apple berry (*Rubus chamæmorus*). Of less general distribution are strawberries (*Fragaria chiloensis*), dewberries (*Rubus stellatus*), thimbleberries (*R. parviflorus*), salalberries (*Gaultheria shallon*), bog cranberries (*Vaccinium oxycoccus*), wine or bear berries (*Arctostaphylos alpina*), etc. These berries are used in many ways by the native and white population, and in addition to

the consumption of fresh berries many are stored up in various ways for winter use."

The region of forest, the "monotonous forest of spruce and aspen," as it is called by McConnell, extends with breaks for still three hundred miles northward of Dawson, where it succumbs to the icy draughts from the arctic sea, a hundred or a hundred and fifty miles distant. Low scatterings of alder and willow, too diminutive in stature to be classed as forest, extend outward the timber line, and even considerably, beyond which follow the tundra and frozen morass to the continental border. Two regions widely removed from this offer interesting studies by way of comparison. These are Greenland and Siberia. In Greenland no elements of a strictly arboreal vegetation are to be met with north of the sixty-third parallel of latitude, but representatives of two or more trees—procumbent, gnarled, and twisted—are at least suggestive of woodland scenery. These are the dwarf birch and arctic willow, the former of which, diminutive in its stem and leaves, rears itself but a few inches above the surface, while the latter succeeds in scattering its frame over an extent of three or four feet. Both plants may be said by their aggregations to form dimin-

utive forests, over which the shadow of an ordinary large hat would cast a darkening cloud. How different this from the woodland through which the lower Bonanza threads its course or the leafy glades of the ridge of Dome Mountain! In Siberia, on the other hand, the upright larches follow the Yenissei as far as latitude  $69^{\circ} 40'$ , and Nordenskjöld describes the components of the pine and fir forests beyond the Arctic Circle as being of colossal dimensions.

It could hardly be expected in a region of waters and rich vegetation that insect pests would be wanting, or that it would be easy to escape their torments. The mosquito and midge have been so thoroughly associated with the discomforts of the North—have, in fact, been so completely incorporated as a part of their essence, that it would be folly to penetrate into the region without fully providing one's self with the most subtle means to ensure immunity from attack. Such, at least, is the view of the outfitters at the coast, and of sundry manufacturers of mosquito tents, mosquito head veils and head cages, and of other articles tending in the same direction, not to mention lubricators and anointing oils of various kinds, and



I feel disposed to consider the precautions well taken. These insect pests may or may not be present, but once where they are about it is well to be provided. My own experience was an almost absolutely negative one. I had provided almost everything that was necessary to resist attack, for from accounts that had been most widely circulated it was easy to believe that the atmosphere of the Klondike was about one half charged with mosquitoes. My preparations for capture were laid in vain—the enemy was not forthcoming. During my entire stay in Dawson I saw not a single mosquito, although doubtless some were present about town; and I am assured that even in what might be considered to be the true mosquito season, May, June, and July, there are not enough of the insects to call for even passing notice. This experience was repeated in the entire Klondike tract that was visited by me, and miners on several of the larger creeks assured me that they paid little or no attention to the existence or non-existence of the little piper. On the other hand, there can be no question as to the reality of the mosquito pest in some quarters. Bogs and boggy pastures there are sufficient to breed any amount of larvæ, and it would perhaps be

well to try here the exterminating (!) process (of breeding dragon flies) which has been recommended for some parts of the New Jersey coast.

Only at one point of our journey were we at all inconvenienced by mosquitoes—the lower end of the White Horse Rapids. They were there in ample quantity, but while musical and bothersome the majority appeared to be of the non-predatory kind. We lay in a “nest” arranging for the transfer of the baggage and freight of the sunken steamer Joseph Clossett, and for hours were exposed to the assaults of the enemy. Once freely moving on the water comfort was again ensured, as there was neither pursuit nor following. Lest some may be misled by my experiences to assume that the mosquito and midge plagues are but a feeble reality in parts of the valley of the Yukon, I take this opportunity to quote from the note-book of my friend Mr. Thomas R. Hill, in charge of the expedition of the Philadelphia Exploration and Mining Company, and commander of the Jenny M. The extracts will serve at the same time for a comparison of certain characters of the regions of the upper and the lower Yukon:

YUKON RIVER, SKUGMUT MISSION, *July 21, 1898.* \*

The river so far has been beautiful beyond description—heavily wooded banks, fine rolling country beyond, with splendid crags and peaks. All yesterday we ran along by great crags of rock finer than the Palisades of the Hudson. We have yet to find the river so very wide; perhaps it has been ten miles in the widest place, but mostly three to five. I am much disappointed in the flowers; none so far but our common wild rose and bluebells. Birds, too, are scarce; nothing but swallows and game birds, ducks, geese, tern, and gulls. . . . Every time we have thus been ashore we have seen fresh bear tracks (one eleven inches long) and sometimes moose and fox. Mosquitoes are worse than has ever been told of—they are appalling! . . . At night, when all else is still, their shrill pipe is constantly “teeing.” It is warm, too, excessively warm; one day the thermometer in the saloon registered 104°.

HALL'S RAPIDS, *July 25th.* ~

The trip up is one of ever increasing beauty, and it may now also be added of grandeur. The whole country is a beautiful green, all shades and tints in the rock cliffs, and the bluest of blue skies. . . . We have seen robins at last; yellow birds, some finches, and an American raven, eagles, fish-hawks, and beautiful tern. A lovely variety of snow-bunting is beginning to be common; kingfishers also are occasionally seen,

while every high bluff has hundreds of sand-martin holes, and the cliffs have the gourd-shaped nest of cliff swallows.

KOYUKUK RIVER, 130 miles from the mouth,  
*August 2d.*

There seem to be few natives on this river. We have seen but one village so far, and that a deserted one. Mosquitoes we do not mind so much, but gnats and sandflies are terrible. This morning Mr. C——'s face and neck are so swollen that he looks like a great fat man. Mr. H——, too, is in bad shape so far as his neck and hands are concerned. Some of us wear no netting, having an idea that this only shuts them in.

On August 14th, at a point on the Koyukuk not very much south of Arctic City, the maximum thermometer registered 93° F. On the 18th of the same month the maximum had fallen to 64° F, with the minimum standing at 31°F. Mr. Hill records for the same day the first frost of the season.

Ivan Petroff in his report to the United States Government on the Population, Industries, and Resources of Alaska (1884), also bears eloquent testimony to the mosquito plague, more particularly in the region of the Kuskokvim River: "There is another feature in this country which, though insignificant on paper,

is to the traveller the most terrible and poignant infliction he can be called upon to bear in a new land. I refer to the clouds of blood-thirsty mosquitoes, accompanied by a vindictive ally in the shape of a small poisonous black fly, under the stress of whose persecution the strongest man with the firmest will must either feel depressed or succumb to low fever. They hold their carnival of human torment from the first growing of spring vegetation in May until it is withered by frosts late in September. Breeding here as they do, in the vast network of slough and swamp, they are able to rally around and to infest the wake and the progress of the explorer beyond all adequate description, and language is simply unable to portray the misery and annoyance accompanying their presence. . . . Mosquitoes torture the Indian dogs to death, especially if one of these animals, by mangle or otherwise, loses an inconsiderable portion of its thick hairy covering, and even drive the bear and the deer into the water."

[NOTE.—Late advices received from Mr. Hill indicate a remarkable growth of forest along the Allenkakat or Alletna, a northern tributary of the Koyukuk, the trees well within the Arctic Circle measuring sixty to a hundred feet in height, and with stocks of two feet diameter. The lowest temperature up to November 20th was — 45° F.]





A bit of Norway in Alaska.—Cascade near Skaguay.



## V.

### A DAWSON HOTEL AND RULING PRICES.

THE hotel "Fair View," the foremost hotel of the land, is situated at the corner of a no-named street and First Avenue. It looks side-ward and backward over an area that is still largely bog and mud, with a scattering through this bog of a goodly number of small log-cabins, while to the front it overlooks a majestic sweep of the Yukon River. Its opening was inaugurated three days before my arrival by an array of good things, many of them unknown before in the region, for which the not immoderate payment of four dollars per cover was exacted, and the hotel was then in a condition of nearly full occupancy. The building is of frame, three stories in height, and twenty-two rooms minister to the comforts of about a third more residents and boarders. My room will serve as a type illustrative of the greater number of apartments in the establishment.

It was hardly to be expected that a stranger

would be misled by advertisements calling for "elegantly furnished apartments," or that his notions of things would be materially disturbed by the claims of competitors to "all the modern improvements," "strictly first class," etc., as the short walk of five minutes from the steamboat landing was sufficient to disillusion him on some points of Dawson supremacy. The holding capacity of my room was adequate for the service to which it was put, but in reality it held very little. To be sure, there was a sufficiently good bed, resting on a carpet, into whose inner make-up it was hardly necessary to inquire, and a small table, primitive in its unvarnished garb of natural wood, stood service for the metal wash-basin which it supported. There was a refreshing freedom from chairs, and an equally comfortable absence of nails and hooks. Undressing was consequently accomplished with a dropping of all clothing on the floor. Whether the shortage of nails was due to a lingering remembrance that in March and April this commodity still commanded twenty-eight dollars a pound, or to that certain indifference to ordinary wants which even the supposition of high prices imposes, was of little consequence. During the longer half of my first

week one would have searched in vain for a looking-glass, and to the end there was no trace of either pitcher or wash-bowl, or of any article of china or porcelain manufacture. A wooden block, carrying three upright nails as receivers, substituted for both candlestick and soap-dish, and a great stretch of canvas, securely tacked to the window-frame, took the place of ordinary window-glass. The absence of window-glass was not a failing with this house alone; hundreds of others shared the same unhappy condition, and not until the approach of impending winter, when it was virtually too late to supply the deficiency, was it realized that a most important article of comfort had been overlooked in the mad race to the interior.

For this combination of good and bad quarters my bill called for the modest weekly payment of \$35, and from the one who desired the room for a single night only the still more aristocratic rate of \$6.50 was asked. Considering that these amounts were independent of board, which was rated, at first, \$25 the week, and later on \$35, one soon realized that before long a strain would set on the money-bag, and that the quality of its contents would have to be strained. And yet an analysis of these charges



shows them not to have been excessive, especially where they referred to the eating. Three good meals, placed at an average rate of \$1.20 each, is a condition not very different from what confronts the traveller in many parts of the established United States; and if the articles served were not in all cases of the best, or what one should have chosen by preference elsewhere, they were yet of a kind and quality to satisfy all but the more exacting. Fresh meat made its appearance at intervals, and if at times it was of moose instead of beef, it still met its purpose and performed its function. One would hardly have expected to enjoy the luxury of fresh cow's milk; milkers were of extreme rarity in the region, and one would well be excused from paying sixty dollars the gallon for an article when so good a substitute as evaporated St. Charles cream was being delivered for a single dollar the can. Before the middle of September the price of cow's milk had fallen to forty dollars the gallon.

The leaves of my note-book furnish some interesting data relative to the condition of a part of the Dawson "market" during the time of my visit: Oranges and lemons, 75 cents apiece (later in the season, two or three for 50 cents);

apples, 25 cents, or, in some places, two for a quarter; potatoes and onions, 75 cents the pound; butter, \$1 the pound; eggs, presumably fresh, but ordinarily with a stale inheritance, \$2.50 a dozen; radishes, 75 cents a bunch of five pieces; cabbages, \$1 the pound; bread, as has before been stated, four to six loaves for a dollar; ordinary beer, a dollar a bottle; Bass's ale, \$2.50 a pint; sugar, 30 cents a pound; canned tomatoes and meats, 75 cents a can; flour, \$10 a sack of fifty pounds. Some of these articles could be had for considerably less later in the season; others had advanced, and will continue to advance progressively until the new spring importations.

Among what might with a certain flavour be properly classed as luxuries were a few water-melons, which were disposed of for \$25 apiece—the last one at a dollar the slice—and a number of cucumbers, which the vender, with a regretful remembrance of the low sale, told me he had sold for \$5 apiece. He felt certain that he could just as well have levied to the extent of \$6 or \$7. Pineapples brought but little more than cucumbers, and cocoanuts tumbled to \$1 the nut. Chickens, which earlier in the season had sold for \$100 for three, were obtainable

at \$10 apiece; pies were still 75 cents the pie, but chewing-gum had dropped to 25 cents the package. It will not be long before many of these articles will be brought into direct competition with the product of the native soil, for already truck patches have been established on some of the more favoured hollows and hillsides. Native radishes, carrots, turnips, lettuce, and peas leave little to be desired as regards either taste or facility of production, and even potatoes are beginning to loom up as a probable resource of the land. A vegetable garden which overlooks the Klondike below the inflow of the Bonanza gives good promise of success, and in less than a month's probation it had yielded a harvest of a thousand dollars. Success in this direction seems not to be a matter of lengthy summers or of a more fertile soil, but rather of a sufficiency of water supply. The question of artificial irrigation is now being carefully considered.

What was most calculated to excite wonder at the possibility of high rates was the price of hay. About two weeks before my arrival it was commanding \$1,200 the ton; on the 1st of August it was still selling for \$800, and even toward the close of September a chance pur-

chase for \$400 could not be guaranteed. It was indeed an inspiring spectacle, and one worthy of dedication to the god of prices, to see the heavily-laden rafts of grass moving down with the swift current of the Yukon. The wealth of stems and leaves was not the product of the outer world either, but simply the maturation of the luxuriant grass of the upper Klondike and Stewart Rivers. At first sight, so high a valuation for a natural product would seem to be impossible, and one would be tempted to doubt the facts unless they were supported by most positive assurance as to their accuracy; but when it is recalled that ordinary unskilled labour was being rewarded at that time with from eight to ten dollars for a single day's work, and that expeditionary enterprises, to which grass-growing and hay-rafting very properly belong, drew still more heavily upon the individual purse, and exacted most painfully of hardship, labour, and accident, the problem very materially simplifies itself, and becomes adjusted to reasonable interpretation. For hauling thirty-four poles of no great size from the steam-boat landing over a distance of only half a mile, \$280 had to be paid. It is the cost of hourly or daily labour which sets the scale of prices,

and is responsible for much of the unwarranted valuations.

On the side opposite to the "Fair View," and almost directly in face of the hotel, two establishments of auctioneers were enlivening the evening hours with spirited rehearsals touching upon cheap prices and necessary articles; and, in truth, many good things could be obtained of them at less than outside bottom prices. I was present when a perfect although used whip-saw was disposed of for \$1.50, a gold-pan for 30 cents, and a Winchester rifle for \$8.50. A whole establishment—that is, a one-story shack with two rooms, together with cooking range and an accompaniment of dishes fitted for a restaurant—was withdrawn because it could not command a higher bid than \$100, an amount not half sufficient to pay for the lumber that was used in the construction of the building. But the season was rapidly drawing to a close, and it was conceded as an explanation of the non-sale that the spring ice of the river would remove the "pins" which bore the little house and tumble it, together with many others of its kind, into the water, and thereby render valueless the purchase. From among the effects that were held by the auc-





Glacier near Skagway.



tioneers and others and were legitimately offered for sale in adjoining booths at surprisingly low rates—as, for example, canvas trousers for \$2.50 the pair; coloured shirts, \$1.50 to \$3; boots and shoes, \$5 to \$7; and numerous articles of food at correspondingly low rates—one could have easily picked out enough to equip a modestly moderate outfit, and at an expenditure not materially exceeding costs at Seattle or Victoria, B. C., the two largest outfitting posts for the Klondike in western America. Naturally, there would be a risk attending this manner of providing; but many now in Dawson, who for one reason or another came in over the passes “light,” will take a proper advantage of these unexpected depots of supply.

The anomalies of providing and forgetting to supply are as curious as they are suggestive in their results. Just why window-glass should have been overlooked as a constituent of Dawson furniture does not appear clear, but the condition is hardly more strange than that which determined a similar forgetfulness in the case of brooms. How many brooms there are in town I do not know, but certainly in the early season there must have been a marked defi-

ciency, otherwise they could not have demanded \$14 apiece, useful article though it was. Later on the price dropped to \$8 the handle, and it finally rested with \$4. Lamps were at the same time selling for \$8 and upward, and the common heating or cooking stove, the collapsible sheet-iron "Yukon," for about \$30. The big heating wood-burner of the "Fair View," looking very like the body of a locomotive, was placed in position at the beginning of September for \$200. I was told that the tinsmiths were reaping a big harvest, the materials of their trade being everywhere and almost at all times in demand.

The condition of the Dawson market must necessarily continue unsteady, but that there will be a general drop in prices for almost everything that is in proper use is certain. Heavy invoices of goods, brought up under the fostering care of the three largest supply companies—the Alaska Commercial, North American Trading and Transportation, and Alaska Exploration Companies, not to mention the less pretentious organizations of trade, or those originating and ending with single individuals—may even glut the market in certain directions; and that they will sufficiently supply hardly admits of

any doubt. A certain amount of secrecy that is observed regarding the character and quantity of the stores that are now being housed in the several capacious warehouses leaves the market largely unknown, and makes hazardous a too free importation on the part of those who only guessingly assume what may or may not be wanted, and who too implicitly rely upon large profits necessarily following "shrewd" guesses as to the condition of stock and supply. One class of articles can safely be depended upon for profit on importation with the beginning of the spring season—fresh perishable fruit and vegetables.

More recent advices received from Dawson show that while there have been repeated fluctuations in values, with occasional upward tendencies, as the result of rumoured shortages and attempts to corner, a reasonable schedule has on the whole been maintained, and the market gives every indication of adjusting itself to a natural basis. Under date of November 1st, United States Consul J. C. McCook writes: "The prices of provisions in this section still advance. The cost of living for a miner who has to buy his food supplies now averages six dollars per day. There is no reason for the



prices asked. There are more food supplies here than can possibly be used, and the supply companies are making immense fortunes. If some firm should send a few thousand tons of supplies and be satisfied with two or three hundred per cent profit, it would prove a blessing to the thousands of miners here. Unless the cost of living becomes more reasonable the poor man who owns a claim cannot afford to work it, unless it should prove to be very rich." A more encouraging outlook was presented later in the season, and the following quotations represent the conditions appertaining to the third week of December (1898): Sugar, which had been forced up to a dollar a pound, was selling for 40 cents; condensed cream, \$36 the case; butter, \$1 per pound; milk, 50 cents a can; flour, \$8 the sack; bacon, 40 cents; fresh beef, 30 cents; canned meats and vegetables, 50 cents the can; beans, 15 cents. The cost of wood, which for the winter season at least is one of the articles most necessary for the comfort and well-being of the inhabitants, had dropped to \$15 the cord, or to less than the actual cost of cutting.

## VI.

### PEOPLE WHOM WE MEET, OR THE SOCIAL CONDITION OF DAWSON.

THE class of sturdy pioneers, men and women, who associate themselves in the opening up of a new country at all times constitutes an interesting sociological study. A first chapter in history is prepared and written, and from it the evolutionary process in human dynamics takes its first germ. The Klondike more particularly, owing to the distinctive conditions, physical and otherwise, which have characterized the movement that has been directed to it, offers a rich field for this form of investigation, and one properly equipped for study will find in the first few years of its development ample material to sustain careful thought. My own impressions are necessarily those of a fleeting traveller only, and give merely the picture of the day.

It can hardly be assumed that a society into whose composition such elements enter as Aleck

MacDonald, Dick Low, Nigger Jim, Jack Dalton, Arizona Charlie, Cariboo Bill, and Swiftwater Bill could be either slow or uninteresting. Rather the reverse; for even if the social fabric is not cast absolutely upon the framework that is here presented, that framework in itself stands for more than at first sight appears. There is a history to each of these names, and the men whom they symbolize are by no means nonentities. One is represented by "millions" in placer claims; another is the pioneer of the now famous Dalton Trail; a third has carried laurels in an exterminating war on the poor Indian; a fourth has earned fame by his renderings of negro melodies; a fifth, by the rapacity and unerring quality of his rifle, and so on to the end of the line. Sturdy men they all are in more senses than one.

But this is only one side to the picture. That rather comely individual dressed in "loud" and ill-fitting mackinaws is Sir —, come here to prospect and invest, whose shabby exterior in no way affects the quality of his bank account. He has just heard of the "strike" on Bear Creek, and, like many others who think that fortunes in the Klondike can be made by the simple wishing, or that the claims should be

accepted at the full valuation that holders put on them, is at once prepared to buy up here, there, and everywhere. That thoughtful, spectacled man of about fifty summers, the cut of whose beard immediately betrays the son of France, is Count C——, an envoy sent by the government of his land to closely scrutinize the actualities and possibilities of this region. A pleasing daughter with blonde locks interprets for him the language of barter and sale, but it is noticed that when he expounds his unalterable views on gold locations and gold occurrences, forcible broken English amply meets his wants. It is not difficult to recognise in the young man of white duck trousers, with a clean-cut, somewhat military face, savouring of the atmosphere of St. James, the representative of an Anglo-South-African company. It is seen not alone in the carefully upturned and infolded nether garments, but equally in the standing collar, the red tie, and the gently peaked hat of Drakensberg. At times of rest and recuperation he wanders about the river front, finding solace in the companionship of boat-oars and tennis rackets, to which a fair associate of pre-eminently British mould escorts him.

These are types whose paths I cross daily,

but there are others that are equally distinctive or characteristic. Look, for example, at that learned "professor-doctor," whose head is so well incased in his broad-rimmed sombrero; can any one doubt that his knowledge of things in general is far ahead of the wisdom of consolidated Dawson? Is it not already seen sparkling in the glass of — which is so carefully and with such repeated finesse handed over the bar to assist in the argument which he is so forcibly developing? I do not know why the Gold Commissioner should be riding in that seemingly dilapidated cart, unless it is that at the moment there is no other for him to take. But we forget that he is a man of very simple habits, with little or no ostentation, and with only a passing care as to whether you are satisfied with the legislation on claims or not. Therefore you only vaguely nod or salute, and pass on. Not so, however, your encounter with the doorman, if you please, of either the Recorder's office or the post office. In these places there is a distinct function to perform, and that is, to keep you out. If you can not explain your mission in the twinkling of a moment, or before the "strong arm of the law" has involuntarily raised itself against you, unless you happen to





Dog-team express,—Dawson.



be a woman, you will experience some strange sensations of a type of ready politeness with which up to this time you had probably not the advantage of coming into contact. Far be it from me to complain of being hustled out into the roadway, or to claim to having overheard a more than generous flow of language, but others have had this experience. If, perchance, you own the benefit of being a woman, whether lady or not, your experience in these sanctums will be very different; and had I been an authoress instead of author, the tenor of these lines would doubtless have varied materially.

Woman is a privileged character in Dawson. She has immediate *entrée* into the depositories of mails, of records, and of claims. Others may sit or stand waiting their turn for days or more in a row; she walks in by the side door with an air of superiority which is as impressive as it is refreshing. She files her claim in the Recorder's office with dignity, while her trousered rival, who may have staked five days earlier, is still studying the entrance from the outside. She reads her mail with smiles and satisfaction, while others are informed that the sorting will not be a *fait accompli* for still a week

or more, or that they have already inquired once during the same fortnight. Womanhood is, of course, not responsible for this condition; it shaped itself under the atmosphere of a new land.

There are women in Dawson whose names are locally, and to-day even at some points of distance, as well known as those of the men I have already mentioned, but history had best remain silent as to their personalities. They flaunt their careers before you undisguised, wear silks and velvets as in any metropolitan city, and ask and receive recognition on the streets in the manner of the *grande dame*. Their influence in matters that may be official to you is not to be ignored; the reward which they have received is measured by some of the best claims in the region. They constitute a part of the stock in trade of the theatre companies; they are the reservoir which supplies much of the patronage to the bars of justice and inebriety. Lest it be assumed that the members of this red sorosis are particularly obtrusive in their calling, it should be said for them that this is not the case, and that their manner in public is much less offensive than that of their sisterhood in our own large cities; and if any

one could but induce the theatrically or operatically inclined to disappear from both the realms of sight and sound, one of the prime evils of their existence would be removed.

At one of the theatrical performances to which I was witness the "Nightingale of the North" was rending the air with a series of selections that had already passed popularity in the south, and with one or two songs which had a local flavour and threatened to press into general favour. "Doris, my Doris," of course caught up the refrain from the packed audience, which I should say was about as well concealed beneath the smoke of tobacco as an army is beneath the smoke of battle. A vociferous applause brought out the not particularly juvenile vocalist to the front, but with a modest bow and winsome smiles, directed more especially to friends and associates in the "boxes," she dismissed the encore and made way for the "Star of the Yukon." If in the goodness of its grace Providence had only allowed the first to remain, we should have pardoned the ill manner of white garments, and even prayed for the dissolution of the woes of impending antiquity; but it was not to be, and we lost faith in the belief that there was mercy in heaven.



Not all the performances, however, are execrably bad, and since my return to civilization I have seen and heard some things on the legitimate boards which could well vie with nearly the worst efforts of the Dawson stage, so that there is as much hope for the one as there is a rightful opportunity to despair for the other. There was no exhibition of dancing on tables or pianos, such as newspaper correspondents like to detail, during my stay in Dawson, and only once was I witness to a somewhat generous distribution or showering of nuggets upon a favourite of the footlights. This was the occasion of the performance of a young miss of some thirteen years, a "marvel" of vocal and histrionic talent, who would have fared better under the severity of a spanking than the misguided applause of a non-discriminating audience. The nuggets naturally counted for something in the family's appreciation. Masked balls became of almost weekly occurrence with the incoming of real dark evening. They were given under the auspices of theatre companies, and usually followed a performance, beginning at about 11.30 and ending with the sober hours of morning. A few of the "upper ten" of Dawson society occasionally witness these perform-

ances, but they are then well screened behind the curtains of the boxes, and even those of humbler position sometimes observe this precaution. The audience is virtually one of men only, and the performance is made to fit the occasion, although ordinarily there is little in it to loudly offend, unless it be the shrieking voice of the master who calls out the steps. My own experiences were decidedly negative so far as value received was concerned, but it was plain that some of the costuming, which was fairly good, and certainly the dancing, appealed to a large body of appreciative patrons.

The first real club, the Dawson Club, was organized shortly before I left the city. Just what its functions are had not been determined at the time, but it is to have a club-house of its own, and the lines of membership will be closely drawn. Its inception began with a storm, and not unlikely it will end in another. It is unfortunate that there is not enough of the better class of women to join in some kind of socially civilizing enterprise. The number of respectables is so limited, at least in comparison with that of the less respectable class, or appear in such widely separated particles, that they can not be assumed to give the tone to Dawson

society. Much more likely is it that some fair demimondaine will be sought for her advice or judgment, than that a "good" one will be rewarded for the virtuous life she has led, and for the promise that lies within her for the future. It was a strange blow to function when the ex-Commissioner of the Yukon district announced his intention to decline a dinner which was being canvassed and prepared in honour of his coming.

The number of blacklegs in Dawson, in so far as they have put themselves directly in evidence, is surprisingly small, and I have already remarked on the feeling of security which every one seems to experience and enjoy. No doubt this will in a measure change with the steady evolution of the town and the formulation of new methods of control, but it is safe to predict a fair continuance of peace and protection so long as the Canadian military police are kept to the standard of efficiency which they have until now maintained. Much is expected from the new incumbent in command of this force—Colonel Steele. A particularly jolly and by no means emaciated ex-featherweight champion of Canada, so the story goes, received one day from the commandant of the mounted police

a bit of paper informing him that his presence was no longer a necessity nor a desirability for the region. He took the hint, and went out. It is this wakefulness and anticipatory spirit on the part of the police which controls the situation—a condition so wholly different from that which but a few weeks before dominated the atmosphere of Skaguay and the American side of the trails, and led to the tragic episode of the “Soapy” Smith revolt.

Frequently since my return to civilization the question has been put to me, “Are there any children in Dawson?” Where should the children of resident parents be if not with them? Surely there are children, boys and girls, and from all ages up, and most of them as happy as the hundreds of kindly dogs that are sunning themselves in the open ways. There are news-venders, the same as with us, and the cries of Nugget and Midnight Sun appear hardly more strange than the more robust ones which from time to time announce the arrival of the Seattle P.-I. (Post-Intelligencer) or the Portland Oregonian. My memory, not less than my note-book, fails to remind me whether I ever met with school children—or, in fact, if schools other than private, barring Sunday

schools, exist. Perhaps not, and if they did, the attendance at them would for the moment hardly be more encouraging than it is at the public library. A wise foresight has brought a compact library of several hundred volumes to the offices of the Bank of British North America, and for an annual subscription rate a part of the select outside can have access to the shelves. One profession or trade, at least, is still open for occupancy. It is that of the bootblack. A single professional there was in the palmy earlier days of the year, when a dollar a shine was thought to be not too exorbitant; but the arctic bubble burst, with the result that every one who cared for foot-polish was thrown upon his own individual resources to provide it. My own efforts to secure it proved fruitless.

Much of the better element that might be thought to make up society is found not in Dawson itself, but in the outskirts which constitute the gold regions. Many a pleasant hour can there be spent discoursing from the summits of "dumps," from the cutting edges of flumes and sluice-boxes, or by the babbling brookside, with its banks of leaves and flowers. And the conversation need not turn, either, on gold, and on "right and "left limits," upon



"bench claims" or "creek claims," upon "bed-rock" or "rim-rock," or upon the woes of the Edmonton and Stickeen routes; but if you have been astute enough to discover in your neighbour or "pardner" the gamut of his or her knowledge, it will not be amiss at times to direct the conversation in the lines of New Zealand terraces, the aims and prospects of Polar exploration, of Austrian politics, or the virtues of Quo Vadis. Naturally, the American-Spanish war came in for the greatest amount of consideration, and while much national spirit and enthusiasm were manifested on both the American and British sides, it can not be said that the undertaking was everywhere received with that open expression of approval which humanitarian enterprises ordinarily call forth. At the Grand Forks village, the Seattle Post-Intelligencer of about two weeks' standing was selling in stray copies for a dollar a copy—a mild return compared with the fifty dollars that it is said was given for a first copy of the same journal which brought the intelligence of the destruction of Cervera's fleet, and from which the news was subsequently dispensed in a rented hall at a tariff that earned the purchaser a profit of several hundred dollars.

On one of the claims of the upper Eldorado a most pleasing young woman from New London, Connecticut, who had only recently entered the state of married life, was sponsor to a cabin whose charm of situation was the woodland by which it was surrounded. I met her on my tour of exploration assisting her husband in an effort to stay a forest fire. Clad in trousers and high rubber boots, with maroon sweater, and without head-covering of any kind to shield her lovely auburn hair, she was a most interesting picture, facing the crackling flames with her water buckets ready to do the service that would be required of them. At her "lodge in the wilderness" Mrs. D—— was as affable as she was serviceable in the field, and with magazines about her on the shelves, and good cheer stowed away in easily accessible parts, one need hardly have sighed for the atmosphere of a New England home far away. Lower down the creek I had the pleasure of the acquaintance of another delightful woman. We sat for a long time discussing the advantages and disadvantages of life in the North, the while fragmenting the conversation with observations on the "panning" that was being done on her claim. She was a graduate from

one of the eastern colleges, and although young in years had ventured by herself to take her chance in the new Eldorado. As events subsequently turned out, she was successful. Near to her, Frau M——, from Vienna, who had evidently seen good days in the Austrian capital, was demurely running a rolling-pin over the washboard; but, as she cheerfully told me, she was perfectly content, and could at any time lay aside the laundry business, as she had one of the good claims on Dominion Creek. Happy woman!

Such are some of the sidelights that come reflected back to us from the kaleidoscopic panorama of Dawson society. The accompanying facsimile reproduction of portions of the issue of the Yukon Midnight Sun for September 31, 1898, will help to a notion of Dawson social happenings as they are reported.

## VII.

### THE TRAIL OF 1898.

HOWEVER divergent may have been the views of Dawsonites with regard to the particular merits of their town, they were a unit in their estimate of the condition of the trails—they were reported execrable. As description made it, water, mud, rocks, and tree-trunks were in a fashion of their own about equally responsible for what existed. The heart of the Klondike gold region is most readily tapped by what is known as the main Bonanza trail. It leaves the river front, abreast of the Alaska Commercial Company's stores, as a fairly good mule road (broad enough for wagons), ascends rather abruptly the wooded and now cottage-lined shoulder of the volcanic knob that dominates the town, and with a certain contraction descends, after gaining an elevation of perhaps one hundred and fifty or two hundred feet, to the water edge of the Klondike River. Here a scow ferry, operated by cable and current, and

## PERSONAL.

Col. Domville departed on the Orabound for Ottawa and London.

J. W. Rogers has bought out the interest of W. C. Berry in the Monte Carlo saloon.

W. G. Johns and sister have departed for San Francisco bound for their home in Chicago.

Mrs. S. Bonnfild and mother were passengers on the steamer Hannah, en route for Berkeley, California.

Mrs. J. W. Morrison left for San Francisco on the Hannah last Thursday, where she will spend the winter visiting old friends.

Clarence Berry and wife, sister-in-law, Frank Berry and W. C. Berry went down on the Hannah for San Francisco, where they will spend the winter.

Louis Stenger and Gus Moore have arrived here from Whatcom, Washington. They brought down considerable hay, grain and merchandise on a scow.

John Nelson has won the lasting gratitude of the managers of the Good Samaritan hospital by loaning the institution a good round sum of money without interest for use in the present emergency.

Aime Bourassa, of Montreal, after spending a month on Stewart river, gave it up as a bad proposition and came on to Dawson, arriving a few weeks ago. He is getting hold of some good properties in this district.

Miss Lulu Craig will open school next Monday at the Church of England. School opens at 9 a. m. All pupils should bring what books they have. Miss Craig comes from St. Joseph, Mo., and bears excellent certificates of character and ability.

W. M. Rank and L. S. Adams, of San Francisco, have returned from the mouth of the Koyukuk. The latter was taken down with typhoid fever and was brought here for medical attendance. They grubstaked Dr. Dowd and A. M. Pope to prospect the bars on the river.

A. J. Cody, inspector of customs for the United States on the Yukon was a visitor in Dawson this week. He has headquarters at Eagle city, but his duties make him sort of a patrolman for the whole extent of the river from St. Michael to the boundary line.

D. H. Hansen, assistant postmaster, has put in a busy week. A batch of mail, consisting of 65 bags of papers and 35 sacks of letters, came in Wednesday, and with the facilities at hand Mr. Hansen is all but swamped. Among the matter received was a package of bread, butter and limburger cheese addressed to "Hungry Joe." The clerks have buried it in a cellar, and it will be dug up whenever "Hungry Joe" asks for his mail.





controlled by a stalwart Swede, takes animals and men to the opposite side, where, after following the stream for about a quarter of a mile, we turn sharply to the right and enter the valley of the Bonanza. This is reached a little short of three miles from the water front of Dawson.

The Klondike where it receives the Bonanza is a rapidly moving stream, of wholly inconsiderable depth, but with plenty of the water-worn *débris* lying along its sides to indicate a special potentiality for the early months of the year. With the melting snows the waters rise high and carry destruction well into the maze of the dry land. A dirtbed-carrying corduroy ushers in about the first mile of Bonanza trail proper, after which we are left to a choice from among several lines of travel all near to one another, all trending up the same valley, and each having something special to recommend it above its neighbours. One is the mule trail proper, with its vertical and lateral deflections, its hoof-worn sinks and puddles, and the ill-paving of rock contours upon which it is founded; the other is a shorter cut through woodland and meadow, with here and there an interposing bog and with a sufficiency of pole bridging across

the Bonanza to make it interesting; and the third is a still shorter cut, based upon much the same lines as the second, but more difficult to follow on account of the intricacies of bush land which it penetrates. It was my fortune to take a combination of the first and second, not so much a matter of choice as an imposition forced upon me by the loss of the course, the path in its upper miles repeatedly crossing and recrossing the stream, obscuring itself among an endless number of dirt heaps or "outputs," and in various ways plaguing one with the eccentricities of its location. On this, my first trip out, the difficulties of the trail were somewhat trying, as I had not yet learned to instinctively recognise the continuations of parts that seemed for a while lost, and several times an erring judgment led me far astray—once into an uncompromising boggy hillside, with only charred timber as a relief to the upper crust. Naturally, such side deflections are apt to impress one with an exaggerated notion of defects and difficulties, the verity of which more intimate acquaintance usually dispels. It was so in this instance, for the journeys of a later day over this same trail carried but a feeble reminder of the first experience and were entirely

without incident so far as hardship was concerned.

To sum up the trail briefly: From the mouth of the Bonanza to the confluence of the Eldorado, at what is known as Grand Forks Village, there is an interval of about thirteen miles, measured along the sinuosities of the stream. Most of this course is along a wooded valley, whose enclosing walls, at times pitching steeply, elsewhere opening up gently undulating contours, approach and recede with a certain indefinite irregularity, but nowhere do they degrade themselves to the rank of obliterated hills. Numerous side arms to the valley come in from the right and from the left, and they too are as beautifully wooded as is the main valley. The Bonanza itself would be described as a stream of only moderate capacity, but in early spring the fury of its boulder-laden waters is felt many feet above the level of its summer or autumn surface. At but few points does it exceed in width twenty or twenty-five feet, and in most places it was several feet less than this. The valley is, on the other hand, a measurably broad one, and locates in many parts a wide expanse of flood plain. It is only natural that one should look for bog formations in lo-

calities of this kind, especially in a region of frozen subsoils. Not alone do the surface waters conduce to their existence, but the seepage flows have much to do with them, and in certain localities, at least, they are most concerned in their formation. In whatever way formed, these swamps, bogs, or morasses are by far the worst features of the trails. They are in no sense difficult of passage, as the depth of water is usually quite inconsiderable—ordinarily a foot, more or less—but there is just enough of it to make walking anything but a pleasure, especially where one is not provided with water-proof boots. Most of the miners and prospectors are shod with heavy and clumsy boots, water-proof in all their parts, thick soled, and usually well provided with clog nails. Such serve all the requirements of resistance against water, mud, and rock; but it was well noticeable that with many they acted as a powerful drag to protracted walking, fatiguing the calves of the legs as well as the feet. My own experience taught me that in fine weather an ordinary pair of shoes with stout soles was all that was necessary, as with a little manipulation or detouring most of the swampy places could be passed without wetting the feet to any extent; and





The "Belle of the White Pass,"—An Easter-day exercise.



with an extra pair or two of stockings little attention need be paid to this wetting. It is astonishing how soft and muddy the trail suddenly may become after heavy rains; it is at such times that something else is needed besides ordinary shoes, for then the mire continues almost without break for miles at a stretch.

The longest reach of ooze or bog that is found in the Klondike trails is probably that of the upper Bonanza, beginning about four and a half miles above its confluence with the Eldorado, and extending for the better part of a mile to the inflow of Carmack's Fork (at Claim "60 above"). The discomforts of this bog, which is really an inundated pine tract, are heightened by the circumstances that the majority of the trees and treelets are charred to the core and blacken everything that comes in contact with them. You step or jump from one knoll of grass to another to find that in many cases the choice has selected the worst or softest spot in the bush, and he may be considered lucky who has made no further discovery. The burros are in such places oftentimes sorely puzzled as to their course, and they hesitatingly put out their feet as if on probation before trusting their body's weight to them.

But paint the trail as black as we may, it hardly merits that extreme condemnation which has been so generally meted out to it, except possibly at a period of unusual wetness; and there are many parts of our own northern woods where the trails are equally bad, or at least not much better. Unfortunately most of the prospectors are so burdened with packs that to them the deficiencies must appear exaggerated, for even the best-laid roads would under these conditions of travel become wearisome after a few miles' journey. It is little wonder that bitter complaint is made of the officials in Dawson who, while legally exacting the royalty tax of ten per cent on the miners' output, do all but nothing to improve the condition of the highways leading to the source of the revenue. The number of spots that require looking after is small, and these could be adjusted and kept in moderately good repair for a mere pittance in outlay; their good keeping would be a boon to the hundreds or thousands, young as well as old, who daily traverse the trails. The suggestion is here offered that the best possible form of representation work that could be exacted from a claim locator would be that looking to the construction of a trail or roadway

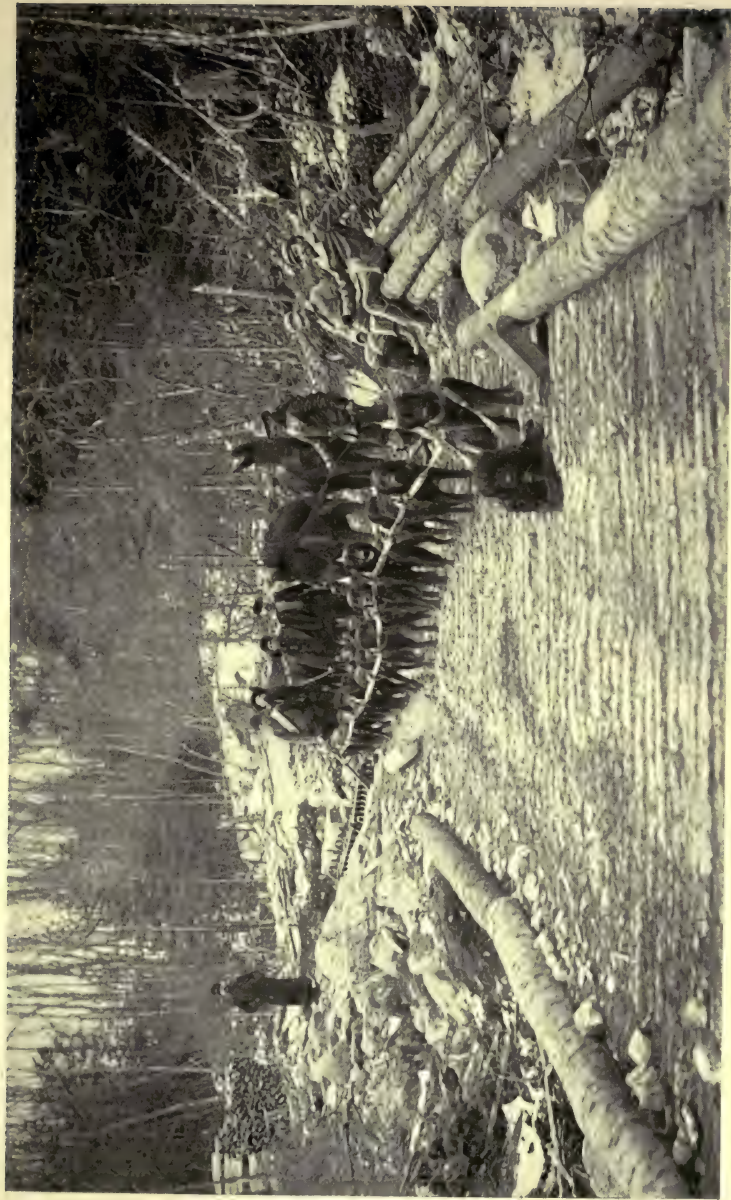
through his holding. This could easily be accomplished, and, so far as my memory serves me, there is no creek claim, despite its flumes and sluice-boxes, which will not permit of a respectable path being run through it, whether on a level or supported in part by boarding. Even in its worst or most expensive form such construction would entail considerably less expense on the individual claim holders than the conscientious adherence to the three months' consecutive work that is prescribed by law, and to each it would be a benefit for which he would be extremely grateful. In a year's time, and with no expense to the government, a continuous trail or roadway could be run out for miles into the heart of the gold country. This form of representation, moreover, would have the advantage of making itself public, so that there could be no evasion, especially where roadway inspectors, instead of spies, would be appointed to report upon the character of the work done.

Those knowing the Bonanza trail and who are familiar with its peculiarities make surprisingly good time in their journeys. Close to four miles an hour is their usual gait, whether with or without a pack; up and around the dumps, across sluice-boxes and under flumes,



through bogs and over pole bridges, they go with the finish of a cut machine. The full journey from Dawson to the Grand Forks, including halts, is frequently made in four hours, and the more inured will not hesitate on a single day's exercise of thirty miles. Miners not rarely make the traverse from Dawson to the upper "road house" on Dominion Creek, across the high divide of the Dome, in a continuous walk of less than twenty-four hours, and my own record stands little behind this. From these statements one can readily gather that the trails, bad though they certainly are, have not that terrifying aspect with which they have been invested.

Most of the so-called wet trails, of which the Bonanza is a type, are more readily passed in the winter time than in the summer, as everything is then frozen solid, while the thick and even blanketing of snow, levelling out the irregularities of the valley, builds up a most advantageous bed for sledging. Dog trains with loaded sleds make the journey over the snow from the Eldorado to Dawson in three hours or less, using mainly the channel of the stream for their course. My summer days naturally did not permit me to enjoy this winter exercise,



Dog-team on Brackett's wagon road.—White Pass trail.



but I have heard it extolled by women as well as men in the highest terms. With a good bundling up in furs and blanketing, and the advantage of one of those delightfully quiet, crisp days which only the high northern regions can produce, there is no reason why it should not be a delightful one.

A pleasing feature of the trails is the hospitality that is found resident within the precincts of the little log-cabins that line the way. The greater number of the claims, at least on Eldorado and Bonanza, have these primitive habitations, and inasmuch as the claims have lengths not exceeding five hundred feet, measured along the creek, they follow one another in rapid succession. Many a pleasant hour have I passed in the welcome shade of the log walls, enjoying the good cheer of a bottle of Burgundy of port or the more prosaic wash of English breakfast tea. Cosmopolitanism is necessarily the characteristic of these road settlements, since nearly all quarters of the globe have contributed something to the population. Africa, Australia, and New Zealand have their representatives in the field, as well as Italy, France, Austria, and Sweden; and they constitute at least as intelligent or intellectual a part of the com-

munity as the more numerous sons of the nearer Northwest Territory. No one has so far attempted to apportion out the population of the Klondike into its national elements, and until a careful count is made it will be a mere hazard that will state the numerical standing of the different peoples; but that the region offers a fine opportunity for the study, in a condensed area and under a variety of forms, of most diverse racial characteristics no one will deny.

In distinction to the type of trail which is represented by the Bonanza or its continuation in another direction, the Eldorado, is the "dry trail" which conducts over the high mass of the Dome to Dominion Creek, or with right and left deflections to the head waters of Sulphur and Hunker creeks. It leaves the Bonanza at its junction with Carmack's Fork, abreast of "Claim 60 above Discovery," and immediately ascends in steep courses the wooded slopes, bright with the green light of birch, beech, and poplar, which here interject themselves as a water parting. To one just emerging from that most dismal swamp tract which constitutes the Bonanza trail in the mile before reaching this parting, no more pleasing gift could be decreed than the tread of this wild



wood path, solid in its every part and dry as the sands of the Sahara. What a contrast! one is forced repeatedly to exclaim; what a delight! even with its long-continued and steady rise. On August 12th, when I crossed it for the first time, its condition could hardly have been better. The rapid and easy stride of the pack-animals showed that they too appreciated its quality, despite their overhanging burdens of one hundred and fifty or two hundred pounds with which many of them were loaded.

A busy line of travellers can at almost all times be met with on this trail. Single men and women, others united into groups, go slowly toiling along, the majority bound for Dominion. The more fortunate ones have the greater part of their packs mounted on horses; the less fortunate shift as best they can, with burdens that are at times distressingly bulky and weighty. In most instances my inquiry brought out the fact that these toilers, whom one should have hoped to recognise as claim holders, were merely intent upon prospecting, having nothing definite in view or mind. They were being lured on by the reports of rich finds, but they did not seem to realize that these finds were already in staked territory, and that the

chance man could hardly hope for a discovery. Far be it from me to advise that this chance prospecting should not be attempted; but if done, it should be done without the incubus of a pack, which saps what little vitality is left within an exhausted frame and grinds one down to the single process of getting over a trail. In a region of easy accessibility and where accommodations are provided in established road houses it is economy, even with the high tariff of prices that now prevails, to travel quickly and light. Sufficient vigour and force are then left within one to permit of experimental work, and it is not merely a question as to how much trail can be covered in a given time under a given load. A sight that can hardly fail to appeal to one's sympathies is that presented by the trains of small dogs, not harnessed in any way, which carry material in sacks suspended over their backs. Poor creatures! they are at times so freighted down that they seem hardly able to walk. Here and there one would halt, apparently to consider the question of help being reached out to him; another would be found staggering under a load which had lost its equipoise and required adjustment. The coming of an opposite team is almost invariably the sig-



The White Pass trail, July, 1898.



nal for a special awakening, and many a rough scramble takes place upon these mountain passes.

The Dome trail affords the finest view of the Klondike tract that is to be obtained in the region. It attains the point of greatest eminence, not far from thirty-seven hundred feet, and from it on a clear day the eye wanders far off to the wall of snow-covered rock which constitutes the main mass of the Rocky Mountains. Nearer to us is only a rapid alternation of ridges and depressions, most of them well covered with woodland, except where the elevation is such as to carry beyond the tree-zone, if not absolutely to the tree-line, and the surface is exposed to driving winds. In such exposed situations a pleasing expanse of herbage, blotched here and there with shrubbery and only at long intervals broken through by projecting rock masses, gives the colour to the landscape. The smoke from distant forest fires obscures a little here, and more there, and it tells the story of the advent of man and the following that comes with him. An occasional jingling bell, or the musical whine of a Molamoot dog, may announce the tread of a free tiller of the soil, or of the passing of a cargador's train; but gener-



ally impressive silence reigns over this majestic mountain of the North.

At this time trails of one kind or another intersect most of the mountain ridges and penetrate deep into the receding valleys. Some of these are still the simple trails of the moose, and have received little addition to them from the hand of man; others are exclusively man's handiwork; but many of them have been broken out by the Indian, who for ages inhabited the land before the white man's coming. Everywhere the prospector is pushing his way, and on high as well as on low, a trail, whether wet or dry, is being opened out to the heart of the land.

## VIII.

### THE EXIGENCIES AND MECHANICS OF STEAMBOAT NAVIGATION.

WITH the waning of the summer season and the steady incoming of the aurora, those of the inhabitants of Dawson who had the outer world to reach before the river was closed to navigation eagerly scanned the notices of "last chances" and of the final opportunity to take departure. Each outgoing steamer, whether directed up stream or down, was crowded to its full capacity, and oftentimes to much more, ever since the third week in August. This time limit was considered to be the margin of safety with some; others tarried with indecision through the first and second weeks in September; and finally when it became known that through the rapid falling of the water and the anticipated invasion by ice a passage out might be made problematical, a rush was made to the booking offices, with the result of disappointment coming to many who were too late to

secure accommodation. The last steamer for down the river, the John Cudahy, had left on September 14th, and the small reliable steamers for up stream were, with one exception, considered to be out on their "finals"; and from the captain of one of them came the assurance that the service had practically closed for the season.

It was at this juncture that robust and genial Captain C——, whose experience had helped to bring down a small steamer from Bennett, but who could not take it back again for lack of propelling power, posted up in the most conspicuous parts of town the following startling headlines:

FIRE !   FIRE !   FIRE !  
Six Days to White Horse Rapids.  
The Swift and Elegant Steamer  
James D——  
Etc., etc., etc.

These words were of importance to many, and of particular interest to all, as they conveyed notice that a steamer one hundred and twenty-five feet in length, with powerful engines, fairly well-appointed cabins and a long saloon, and illumined all through with a galaxy of elec-



Copyright, 1898, by E. A. Hegg.

The final ascent to the Chilkoot summit.—Winter.





tric lights, was to make the journey upstream at the end of the season and practically close it. It had been preceded by the *Columbian* and the *Canadian*, two other large steamboats of a different line, on their last trips; and even the smaller *bateaux mouches* no longer guaranteed the journey.

The *James D*—— left her moorings shortly before noon of September 20th. A year before, at the same period, the Yukon was considered closed for navigation. Great quantities of ice had been thrown into it by the *Stewart*, *White*, and *Pelly* tributaries; and while not frozen solidly over, it was in that state which precluded a contest against the combined energies of frost and current. Moreover, there were no steam craft in this section of the river, and navigation upstream meant navigation by means of the paddle and pole. The experiences for this year were therefore both novel and interesting. Of the one hundred and six passengers, eight were women, both young and advanced, some of whom, owing to the limited supply of stateroom accommodation, were obliged to share quarters with the men. Three of the younger women, even if not professionally so, were gamblers, and their money was in evi-

dence on the saloon tables almost every evening of two weeks; they were all three "claim owners." Of the others, an elder, whose experiences in life had taken her to India and the pyramids of Egypt, and whose command of Italian, German, and French was in marked contrast to an outward appearance suggestive of the Emerald Isle, was perhaps the most interesting character, wrapped, as she was most of the time, in painful solicitude over her dog "Sheppie"—as faithful a setter as was ever found; only at intervals did she allow herself to discourse upon the woes and blessings of life. She had had a successful venture, but, failing to provide a needed stock of winter dry goods, was now going out to supply the deficiency, to return again in January. Hers was not always an unsullied language; but the elements of its composition were in the main pre-Dawsonian, as any one acquainted with western life would immediately recognise. It did good later on to hear her recital of her trip over the White Pass, the "first woman in history to do it on horseback." And she did it astraddle.

The men passengers were a decidedly mixed lot, and they represented about as many diverse

types of energy as could be crowded into a possible ninety-eight. There were some of the wealthiest claim holders of the Klondike region, merchants from Victoria and San Francisco, agents of steamship and railroad trunk-lines, professors of geology in the United States and Sweden, Government representatives and Dominion surveyors, newspaper men, professional miners, and free pioneers. Add to this an ex-prizefighter, who was serving out his passage below, and a "millionaire" gambler from Butte, Montana, who more than served out his passage above, and we have the list virtually complete. However varied or diverse may have been the individual callings, the principals agreed in one broad essential—in complaining, almost from the beginning to the end, of one thing or another in connection with the management of the boat. Sleeping accommodations, except over the rough surfaces of baggage and freight, were wanting to some, and ventilation in the saloon or in the staterooms was wanting to others; about seventy wished for a more extensive display of washing facilities; and nearly all could have made good use of a decided increase in the variety and the character of the food supply. For the last named a

charge was made of a dollar and a half a meal, subsequently reduced to one dollar; many who could readily satisfy an easy conscience did not pay at all, except possibly in bribe fees to some of the attendants.

Of the things that we had too much, and which were cause for additional complaint, were crowd, inexcrably bad service, defective steering gear, and a captain. We should have done better without the last-named quantity, as the young pilot whom we picked up on the third day became virtually master, and it was his management that in the main, after a struggle of two weeks, brought us through. The journey down from the White Horse Rapids had been made in three and a half days. It was only on this upstream journey that the difficulties of combating a six-eight mile current, over a course that is largely impeded by bars and shallows, were made a lesson. It would serve no purpose to recite the number of times that we were stalled; to us, as passengers who had misgivings lest we should not be able to extricate ourselves before the drop of the river or its freezing over, it seemed as though we had found every bar or shallow that was extant. Our troubles began before we had fully





The Bonanza trail.





passed the mouth of the Stewart River, and just beyond it we were "barred" for hours. A little past Fort Selkirk we were a day and a half in getting off a gravel bank, and had already parted two lines and uprooted several foresters in our effort to get into four and a half feet of water. We squirmed through the Rink Rapids without hindrance, but within the shadows of the great conglomerate masses which, five miles above, split the river into the Five Finger Rapids we met with a series of mishaps and conditions which are inscribed in my notebook as follows:

*September 29th.*—Attempt the right-hand down-stream) passage of the Five Finger Rapids. Steamer steered beautifully to the middle, with about an equal space of safety, two or three feet, on either side. Exultant cheering, but we strike a ledge when half through. Swept back by a seven-mile current, and bang! we go against the encasing rocks, which rip off part of the end boards of the cabin, the guard rail, and some of the circumference of the wheel. A second effort is made with the passengers crawling over the shore trail, but the starboard steam chest blows out, and again there are the cracking and smashing of steamboat timber as our craft is swept helpless into a side eddy. Engineer and captain report that "all is up."

*September 30th.*—Most of last night and the better hours of to-day spent in forging repairs. A mechanic of Seattle, Welbon, leads the work, and it looks as if we might succeed. Everybody growling, no two at the same thing. Steamer *Golden Star*, one of our hopes for salvation, shoots down stream, saluting as she passes. We have no steam and can not answer. Seemingly our last chance gone. Jack Dalton, with Mr. Liebes and Dick Low, fellow-passengers who left us two miles above Fort Selkirk, pass on the opposite side of the river, heading for the Dalton trail. Our spirits revive as the work progresses. Weather magnificent, and the vegetation still brilliantly green.

*October 1st.*—We make a new effort. Hawsers have been taken ahead and fixed to rocks and trees to give the steamer a chance to grapple. A tremendous hurrah as the bow slowly pushes up the stream and she pulls through. Congratulations on our escape from a winter confinement.

Thus it was that we rounded off this chapter of our difficulties. A little later we were forced to remove about a foot or more of the circumference of the wheel, as it was found that the boat was slightly "hogged," and it dragged behind. Instead of drawing only two and a half feet of water, as it was thought she would do, she actually struck bottom in about four feet,

the passenger displacement alone being six inches. An entry in my notebook a little later on recites:

We have been making good progress, and our repairs hold out. The current continues terribly swift in places, and we have difficulty in rounding a sharp, steeply banked bend. For an hour or more we have been trying it from one side, then from the other; but with the result that we make no headway. "We shall put on all steam and go through or bust," says the one in command, and it really looks as if we are to be successful this time. We have failed and are hard aground. Two of our rudder bars are completely twisted out of joint, and it means work through the night forging and hammering new ones. We wonder what next is to happen.

*October 2d.*—We have three rudders again in position, and are surprised how now, without further difficulty, we make the point and bend. Evidently the rudders could not have properly responded long before we were thrown on the shore, and we thank them for much unmanageableness of the steamer. At the mouth of the Hootalinqua we pass the Canadian pressed to a lee shore, where she is to winter and avoid the jam of ice. At about four in the afternoon we enter the Thirty Mile (a stretch of Yukon waters of about this length having a nearly uniform swift current), and how we tremble for the result

of our patchwork! We don't mind the rudders, as the river is sufficiently deep to prevent touching bottom, but with an extra head of steam on it is feared, although not by the engineer or pilot, that we might again blow out the steam chest. At ten o'clock we tie up to the left bank for the night, having made a little more than half of the Thirty Mile. Our search light brings to prominence a forlorn-looking donkey, which we add to our passenger list. We have now on board four dogs; one has given us some trouble by having strayed away during times of wood chopping or wood hauling, and another, a thin and wheezy thing, which some like to look upon as the hoodoo of the expedition, looks as though it was preparing for trouble through the scalding it had received at the time of our explosion.

*October 3d.*—We were off this morning by 6:30. A little ice is beginning to form along the edges of the water, but there is no indication in this stretch that the river is falling rapidly. We can not be far from flood water, as part of the woodland is immersed and the bank covered. The current keeps on swift as before, but we no longer fear accident, as our effort of yesterday was a sufficient trial of resistance to satisfy our minds. What an extraordinary transparency of waters! Fifteen and twenty feet down the pebbles and boulders are almost as sharply defined as though they were behind only slightly tinted glass. Lake Lebarge above us is the



reservoir that strains the river, hence this extreme purity. We enter the lake and almost immediately stir up a mud-bank. The open expanse is a relief after the rather close confinement of yesterday, and the rugged scenery of glaciated rocks becomes more and more impressive as we proceed. The prospectors, and even some of the gamblers, take an interest in this development, and Professor Nordenskjöld \* is busy with his notebook. My young lady friend of curly locks and dark blue bicycle suit, from Spokane, is fascinated with the landscape; and her memory serves to pick out many choice bits of scenery which she had noted on her way in.

We tie up for the day about six miles below the rapids—why, no one except those in authority seems to know. More of the hours of the day have been put to hauling wood than to steaming, and the bow and front of the steamer are stacked high with boiler fuel. Surely we might have reached the White Horse Rapids this day.

*October 4th.*—We reach the rapids, or rather a position one mile below them, a little before eight o'clock, only to learn that the connecting steamer above the cañon had left for Bennett at five o'clock the same morning. Any amount of grumbling about things in general, some things

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\* Professor of Geology and Mineralogy at the University of Stockholm and nephew of the greater Baron Nordenskjöld.

in particular, and one thing especially—and this is that we are all obliged to transport what impedimenta we have to the beginning of the pole tram road, about a mile across country. The morning is crisp and sharp, and the trail rings with the click of frozen ground. We realize that the end of the season is near at hand, and have reason to be thankful that we have come out this far. A little steamer, the Kilbourne, with accommodations for sixteen, is tied to McCauley's landing, just above the cañon, and is preparing to leave for Bennett. Nearly forty of our party take possession and crowd it to the capacity of a filled cattle car. We wish them a harmless *bon voyage*, some of us perhaps secretly regretting that we are not also on board; but in less than half an hour the steamer disengages one of her piston rods, and ties up to the shore a few hundred yards away. (Later in the day, as we subsequently learned, she blew out something else; and all in all she, not less than the passengers, had a hard time of it.)

*October 5th.*—No signs of the Nora. The tent of last night proved a cold performance, and for to-night I shall elect a composite of two benches in the dining-room of Norman McCauley's "inn." The ground was solidly frozen, and washing outside was anything but a luxury. But the day is simply glorious.

*October 6th.*—Still no Nora, and I make preparations to take possession of a part of the floor,

as the benches are largely of uneven height and give little comfort. Meals are a dollar and a half, or, with fresh eggs added, two dollars. We are lodged in half a dozen different places, the most substantial quarters being those held down by the gold dust which we brought away with us, and of which McDonald, the "king of the Klondike," has the greater part. Probably there is distributed between five or six of us—I am not one of this number—in the neighbourhood of one hundred thousand dollars' worth of dust and nuggets.

*October 7th.*—Still no news of our expected carrier, and we are beginning to feel anxious. Another chance to be cooped up for the winter.

*October 8th.*—The *Nora* arrives at nine o'clock, and is preparing to sail again at ten or a little after. She was pushing along two scows, and had done some towing—hence the delay in her coming. Deliverance is at hand, and all grumbling ceases. We however complain that not all can get sleeping accommodations, and that on account of darkness we shall be obliged to tie up for the greater part of the night; also because our departed friends on the *Kilbourne* are making good headway; and, again, for the reason that the mountains about *Bennett* are reported to be snow-bound—a condition not arguing pleasantly for the passes. We are off.

Thus, with a hundred miles additional of navigation added on, virtually ended my experience of steamboating on the Yukon. It was a pleasurable one, despite its mishaps and discomforts, and many others thought as I did. Of its kind, it will soon be at an end, for with better knowledge of the river and sundry charts to guide one, with properly constructed steamers, and, above all, with commanding officers whose experience has taught them not only the eccentricities of swift-water navigation but the foibles of a body of passengers whose whims and fancies are as diverse as they easily can be, a new era in this development of the North will be inaugurated. Much or most of the Yukon will at best always prove a difficult river to navigate, but the exaggerations drawn from shifting bars and shallows will gradually melt away before the experience of tried commanders, just as they did years ago in the case of the Mississippi. This year's conditions on the Yukon below Dawson prove this. Up to the time of my leaving, September 20th, there had been fifty-two arrivals of steamboats from down the river, by far the greater number coming all the way from St. Michael. Several of these came through without the assistance of local





Steamer Ora descending the Upper Yukon.





or Indian pilots, the experience of their masters being sufficient to carry them through all the intricate channels and to insure safety from (what is seemingly needless) grounding. I subjoin below a list of the steamers arriving, together with the dates of their arrivals, thinking that possibly it may serve as a guide to the discussion of the navigation problem.

*Arrivals at Dawson (1898, up to Sept. 20th) from down the River.*

May West.....	June 8th and Sept. 1st.
C. H. Hamilton.....	" 18th and Aug. 20th.
P. B. Weare.....	" 21st and " 9th.
Bella .....	" 24th, July 30th, and Sept. 7th.
Seattle I.....	" 25th and Aug. 28th.
W. K. Merwin.....	" 30th and Sept. 20th.
Alice .....	July 5th.
John J. Healy.....	" 9th and Aug. 20th.
Margaret.....	" 10th.
Monarch*.....	" 21st and Sept. 12th.
Sovereign.....	July 26th.
John C. Barr .....	" 27th, Aug. 24th, and Sept. 3d.
Leah .....	" 27th and Sept. 5th.
Susie .....	Aug. 9th " " 11th.
John Cudahy .....	" 10th " " 7th.
Linda .....	" 12th " Aug. 26th (half trip).
Louise.....	" 15th.
T. C. Power.....	" 17th.
Columbian .....	" 18th.
James Domville.....	" 21st and Sept. 16th.

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\* This was the first steamer to arrive from St. Michael, the earlier ones coming from "winter quarters."

*Arrivals at Dawson (continued).*

Yukoner .....	Aug. 22d.	
Rock Island.....	"	23d.
Canadian .....	"	23d.
Rideout.....	"	26th.
Seattle III.....	"	27th.
Oil City.....	"	" and Sept. 9th and 18th (half trips).
F. K. Gustin.....	"	30th.
Hannah.....	"	31st.
J. P. Light .....	Sept.	6th.
Tyrrell .....	"	"
Clara .....	"	7th.
Gold Star .....	"	8th.
Seattle.....	"	9th.
D. R. Campbell....	"	"
Lightning .....	"	12th.
Milwaukee .....	"	"
Pilgrim .....	"	20th.
Tacoma.....	"	"

Several of these steamers were subsequently transferred to the upper river to compete with the smaller steamers of the class of the Ora, Flora, Willie Irving, and Goddard, which established the steam route down from the lakes.

It will be seen from this list that there have been a number of comparatively rapid passages. The steamer John Cudahy, operated by the North American Transportation and Trading Company, holds the record for speed, it having made the journey from St. Michael to Dawson in eleven days and a half, and the proud

craft carries tied to her "masthead" the broom of the conqueror. A hardly less rapid journey was made by the *Susie*, of the Alaska Commercial Company's line, which, with her sister ship, the *Hannah*, is easily the peer of the entire Yukon fleet in all that pertains to comfort and elegance of appointments. She has the almost absolute build of the regular Mississippi steamers, so that with her majestic form of two hundred and twenty-five feet length lying alongside the waterway a spectator could easily imagine himself standing somewhere on the shores of the "Father of Waters" of the United States. It was a magnificent spectacle the first arrival of this large craft just before midnight of August 9th; electric lights were ablaze in all the cabin windows, and from above the pilot house a stream of search light was thrown into seemingly all the nooks and corners of the landscape of both sides of the river. An immense throng of people greeted this arrival, so different in the quality and quantity that it represented from anything that had come before.

Mention should in this place be made of the actual running time of the *Yukoner*, a little over eight days out of a full passage of thirteen days; this represents the most rapid up-stream

travelling that has been accomplished thus far. The remaining five days of the journey were consumed in cutting and hauling timber for fuel. It is the necessity of this condition, the preliminary to butting against over a thousand miles of swift current, which so wearily draws out the journey upstream. Naturally, with the introduction of coal for fuel in place of wood the delays incident to this work must soon disappear, and it is certain that with the present standing and future expansion of the Yukon fleet, the woodland that to-day gives fuel to about fifty pairs of boilers, besides supplying very much else, will soon be a thing of the past. Already there are large gaps in the forest, and "tramp" steamers, or those not recognised as belonging to established pioneer lines, have difficulty in obtaining a source of supply—sometimes gotten over by deliberately taking possession of wood already corded on order, and substituting for it a receipt and request to send bill for the robbery to —.

Announcement has recently been made of the discovery of important beds of coal or lignite at one or two points along the middle course of the Yukon, which, if true to the full extent that is reported, may help much to sim-



plify the problem of the river's navigation and the conditions that are dependent upon it. A supply is also known or supposed to exist in the region of the headwaters of the Klondike, or near to it, and this must necessarily have a special bearing upon the conditions that are to prevail at Dawson and the Klondike gold tract. So far as the near possibilities of the lower Yukon are concerned, count must be had of the advantages which are being thrown to the trade and traffic of the upper Yukon. With only a short arm of the river to contend with, with a comparatively short ocean way, and with a steam railway before long to tap the water service, the question of equation and balance will soon settle itself.

## IX.

### THE ROUTE TO THE KLONDIKE AND HINTS TO THE TRAVELLER AND PROS- PECTOR.

MUCH the easiest and most comfortable passenger route to the Klondike is to-day, and will continue to be for some time in the future, the route *via* the passes, the lakes, and the upper Yukon—i. e., the “overland” from the towns situated at the head of Lynn Canal, in Alaska. Skaguay and Dyea represent respectively the starting points on the coast of the White Pass and the Chilkoot Pass trails, and the first named is also the terminus of the White Pass and Yukon (Pacific and Arctic) Railway. Three miles of water-way separate these terminals, both of which, in their long piers, are attainable by steamers of moderately deep draught. Epitomized, this journey means: three or four days’ steaming from Seattle or Victoria to Skaguay or Dyea, travel of a day or a day and a half over either the White or the Chil-

koot Pass to Bennett, and three or four days' steam-sailing down the Yukon to Dawson.\* Assuming no delays and the ordinary possibilities of direct connections being made, the journey from a prominent Pacific port to the interior can now be accomplished with moderate comfort in a period of ten days; one more expert in the pedestrian exercise, and to whom the fortune of immediate connections comes as a self-constituted proposition, might reduce this time to nine or even eight days. At the present time, with the operation of sixteen miles or more of road by the Pacific and Arctic Railway, there can hardly be a difference of opinion in the choice of a route to the interior, that of the White Pass offering advantages both as to time and comfort of service. On the outward journey the Chilkoot Pass, owing to its comparatively short rise above Lake Lindeman, may still be preferred by many; but any indecision on this point will before long be permanently set aside by the progressive construction of the steam road. When once completed to the vicinage of Bennett, which will prob-

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\* Since this writing the steamer City of Seattle has reduced the time from Seattle to Skaguay to 62-65 hours.

ably be before the close of the coming summer, the Chilkoot Pass route will be remembered only as a part of history.

It is confidently expected that the Pacific and Arctic Railway, which in the early part of October was operating twelve miles of road from Skaguay to White Pass City and by February of the present year had actually crossed the summit, will, even before the upper waters of the Yukon have been liberated from their winter's ice, reach what is now the British customs station at Log Cabin, eight miles from Bennett. Should this success attend the remarkable energy that is pushing the construction—over four thousand men being employed in the work—the almost “insuperable difficulties” of the passes will have disappeared in hardly more than a single year's period of travel; and with their outgoing, go also the heavy tolls and rates which have been built up as purely fictitious values. Freight has latterly been handled to White Pass City at rates varying from \$2.90 to \$3.50 per hundred pounds, and through to Bennett for \$11 and \$12; but it is expected that with the completion of the road to Bennett, the virtual head of Yukon navigation, it will be practicable to send freight in to Daw-



Arrival of the Susie, from "down the river."





son at a rate not exceeding \$150 per ton.\* The lowest rate of shipment for the forty miles intervening between Skaguay and Bennett was last March (1898) \$220 per ton, and many, both earlier and later, were paying double and nearly treble this amount. With these new facilities for transportation, and the assurance that freight delivered will properly and promptly arrive at its destination, the problem of going into the gold regions becomes so modified and simplified as to no longer merit consideration,

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\* The following schedule of greatly reduced rates is announced in the Skaguay Daily Alaskan of February 19, 1899:

*White Pass Road.*

	Car load (for 100 lbs.).	Less Car load (for 100 lbs.).
General merchandise, Skaguay to Summit.....	\$2.50	\$2.75
Special knocked down, steamers, etc., Skaguay to Summit .....	2.00	—

PACKERS' RATES.

From summit of White Pass to Log Cabin .....	1 cent per lb.
From Summit to Bennett.....	2 cents "

This makes an average car load through rate of three and one half cents a pound from Skaguay to Log Cabin, and four and one half cents a pound from Skaguay to Lake Bennett, a wonderfully low rate when the conditions are taken into consideration, and when compared with the rates that existed prior to the advent of the railroad through White Pass.

except in its details. Conditions prevailing in the interior must necessarily adjust themselves to these outside changes, and the time can be readily foreseen when business and all that pertains to it will be transacted on a reasonable basis.

Heavy and cumbersome freight will for a while continue to go in by way of St. Michael and the mouth of the Yukon, or by what is known as the all-water route, and a certain class of it may always continue to go in that way; but the great bulk of everything, whether living or dead, must soon follow the line of the iron horse, and be assured of easy and rapid delivery. The fastest time that has been made between Seattle and St. Michael, so far as I know, is that of the steamship Conemaugh of the Empire Line (eight days and a half); to this, if we add the fastest time up the Yukon, that of the steamer John Cudahy (eleven days), and allow for no detention of any kind at St. Michael and for a wholly uncertain immediate connection, we have a journey (from Seattle) of nineteen days—almost sufficient for the journey from Liverpool to Dawson by way of the passes. As a matter of fact, however, detentions on the lower river are numerous, and the

navigation is anything but certain. To be stalled by bars is a common occurrence, and hardly any of the craft going up have been entirely free from this experience. To draw over four feet of water is inviting detention, and a draught of three feet is all that can easily be managed over some parts of the river's course, as in the "Flats." A single-masted steamer of oceanic construction, the *Argo*, with twin screws and drawing six feet of water, has succeeded in following up the river as far as Rampart City, somewhat over seven hundred miles. With this exception, all the larger craft are stern wheelers, the newer ones—as the *Susie*, *Louisa*, and *Hannah*, representing the Alaska Commercial Company—being strictly of the Mississippi River type of construction, and rivalling in their appointments the best from the American waters. They measure considerably over two hundred feet in length. Both the new and the older steamboats are generally double deckers, and there is nothing upon which to base the statement that the prevalence of high winds necessitates low construction; during the period of free navigation there is usually little or no wind, the summer atmosphere of the North being singularly passive. The use of

Indian pilots is still pretty faithfully adhered to, but it is realized at the same time that several of the best passages have been made without these "encumbrances," as some of the captains choose to style them, but with the experience of recognised officers of a past Mississippi service. The detentions on the bars are not infrequently of long duration, and it has happened that travellers starting in one year only reached their destination the year after. Up to the time of my departure from Dawson there had been fifty-two arrivals from down the river since the opening of the year's navigation in July, a result surprising in view of the difficulties which the half dozen steamboats of the year before had in completing their journeys.

In addition to the routes of entry into the region which have been referred to, there are a number of others which have a measure of historic success, and are known principally by the disasters and hardships which have followed the effort to test their value as exponents of boom enterprises. Such are the inland or "all-Canadian" Edmonton and Ashcroft routes, the Glenora or Stickeen River route, and the Copper River trail. The experience of hundreds or





First tourist excursion, Pacific and Arctic Railway, July 24, 1898.



thousands who have made or attempted these routes will forever—or at least until that time when new railroad enterprises will have changed the face of the country—dispose of their claims as “satisfactory” avenues of approach. That they should have been followed at all is one of these misguided happenings which not infrequently invade man’s intelligence.

As regards the season for entering the region, this must depend wholly upon the condition, both physical and financial, of the person designing to go in and on his intentions after arriving at Dawson. To one unaccustomed to winter roughing, the winter trail will come as a very hard one, for, joined to deficient accommodations and a long exposed sledge journey, there is the real hardship of extremely severe weather. A temperature that may keep for days at  $20^{\circ}$  to  $30^{\circ}$  below zero, and at times descend even considerably lower, is not to be thought of lightly. Good dog teams, it is expected, will make the service—a partially regular one—from Bennett to Dawson in fifteen days or even less and for those who are accustomed to this form of exercise the journey need not mean much. For others it can mean very much. On the other hand,

the winter traverse of the passes on properly selected days will by many be preferred to the summer crossing; especially is this the case with the White Pass, the comparatively easy contours of which well fit it for sledging. With the differential breaking up of the ice on the Yukon River it is by no means unlikely that steamboat navigation will annually begin first at some point below the lakes, near the mouth of the Hootalinqua possibly, the lakes holding the ice much longer than the swift waters of the flowing river. Should such prove to be the case, then many, doubtless, will prefer to use the winter trail as far as the point of open navigation, one hundred and fifty miles or more below Bennett, and there continue with whatever craft may be prepared to make the down journey. Even a scow or a sailboat can make the journey from the foot of Lake Lebarge to Dawson in from four to five days, assuming navigation to be continued into the hours of night.

At this writing the skeleton of the summer journey from Bennett to Dawson, with approximate costs, conveniences and inconveniences, is as follows:

1. A journey of about ten hours in small

steamers, which, when not overcrowded, furnish apologetic quarters for a night's rest in non-garnished bunks, and meals at the rate of a dollar or a dollar and a half per meal, to the McCauley tramway at the head of Miles Cañon (about one hundred and twenty miles). This service is made almost daily.

2. A four-and-a-half mile portage of freight and baggage by a pole tramway, which operates in connection with the steamers and rarely causes much delay, around the Miles Cañon and the White Horse Rapids. The rate of two cents a pound is charged for such transfer. Passengers and others involved in delays can find tolerable accommodation and fairly good meals at McCauley's.

3. Continuous steamboat journey from the foot of White Horse Rapids to Dawson, in steamers of two or three classes, representing different companies and furnishing different degrees and quantities of comfort. Some of these are semi-palatial in their equipment, if moderately good cabins, electric illumination, and steam heating are elements having this significance. All furnish meals. The service is ordinarily (collectively for all the lines) made about three times in the week, and the jour-



ney, where not accompanied by mishap or bar-delays, is made in from three to four days in the period of light nights—when navigation is easily possible for the full term of twenty-four hours—and in five days during the period of actual nights. The running is then ordinarily suspended for six or seven hours.

I should say that the limit of comfortable passenger capacity on the largest boats is about sixty; nearly or fully double this number have been taken. On the best of the smaller steamers twenty-five to thirty persons would well fill the bunk house and give only three “turns” to each meal; packing to eighty or a hundred is considered no unusual occurrence nor of special consequence. A through passenger rate, exclusive of meals, of seventy-five dollars from Bennett to Dawson ruled through the greater part of the past summer (1898); for the return journey an advance of twenty-five and fifty dollars was asked. In whatever way the service may be considered to-day, it is certain to be vastly improved for the current year, and preparations looking to the construction of more commodious and suitable steamers and a material betterment in the quality and quantity of the food supply that is furnished have already



Cutting grade for the Pacific and Arctic Railway.  
Tunnel Mountain, White Pass route.



been set on foot designed to meet the demands of the years 1899 and following.

A few interesting facts bearing upon the winter journey to or from the Klondike are furnished by the exploits of those who have recently returned from the interior. Thus, the distance of five hundred and eighty miles from Dawson to Skaguay has been made by dog trains on two or more occasions, during the past December and January, in fourteen days and less—truly an extraordinary performance for animals whose work was continuous. There were no delays, and the average rate of travel was consequently upward of forty-one miles per day; on a single day, indeed, it is claimed that eighty-two miles were covered. The first continuous journey by horse and sledge was made by Mr. C. A. Carlson and two associates (one a woman), who left Dawson on the first day of January and arrived at Skaguay on the 24th of the same month; four days of the journey were lost in making repairs to the sledge. This, too, is a remarkable performance, and it will give courage to those who are contemplating a journey to the interior and are deterred by the reports of extraordinary hardships which the trails impose.

In the matter of outfitting, where individual tastes and necessities are apt to be so largely divergent, it is impossible to prescribe a measure or routine that will recommend itself equally to everybody. Further, the conditions associating themselves with the journey have so materially altered during the past year, and still continue changing, that any but the broadest recommendations must necessarily be considered applicable for a certain time period only. The prospective resident and the sight-seeing tourist fall into two very distinct categories so far as this journey is concerned, inasmuch as their methods will be almost diametrically the opposites of each other. The one must prepare for conditions, prolonged and extreme, which in most cases differ wholly from what had individually been experienced before; therefore, he enters experimentally upon a new stage of life and living, and to him experience will count for much in the end. The casual tourist, on the other hand, who is now given the opportunity of seeing a northern land with an aspect very different from what he has been accustomed to enjoy in Scandinavia or Russia, and under conditions which at the utmost impose only discomforts, and these of a rather



mild type, will go in with but little added to his customary valise and with little taken from it. Assuming that he will elect the summer season for his journey, or the months from July to September inclusive, he will realize that the temperature of this period is one marked by heat, and of a kind little if at all different from what he has experienced in more southerly latitudes. His clothing must be made to suit this condition, and not that of winter, which many believe to prevail in the region during all months of the year. The nights are mild, usually more mild than in any moderately mountainous tract of the South, and to many they appeal as nearly the pleasantest part of the daily twenty-four hours. Moderate winter weather prevails on the coast range of mountains (the mountains of the White and Chilkoot Passes) sometimes as early as the middle of August, and a snowstorm may even be ushered in with the month of July. If making a pedestrian or "rail" journey in this region—for no other reason than to enjoy the wild beauty of the scenery, or to study the exquisite sub-Alpine flora of the pass summits, more particularly of the White Pass—preparation must be made to meet the wintry condition and to an extent more than in places of

similarly high elevation in the northern United States. Much the same precaution is made necessary in travelling over the moderately elevated parts of Switzerland. Beyond this precaution, and the very general one which applies to the traverse of all mountain tracts, the summer tourist can leave Skaguay with his usual method, and feel reasonably assured that thus equipped he will reach Dawson in a fairly comfortable way.

The high prices which all articles, whether of clothing or eating, command in the interior make it desirable that the traveller should be fully provided before leaving, and it may be a wise provision to have some extras in the way of canned fruits. Of all, however, he should be provided with a big stock of patience and forbearance; for while he may escape the necessity of drawing upon this portion of his supplies, the chances are very largely that at several times, especially on the slower outward journey, they will be well put into requisition. He must also be prepared to put up with accommodations and a kind of service, whether on the water or on the land, which are for the time very far from what he may have been accustomed to on earlier travels; but, such as they

are, they can be easily met by both man and woman. If a visit to the adjoining gold region is contemplated, and it probably will be included in most itineraries, the traveller will be wise to provide himself with stout waterproof boots—not so stout, however, as to bring fatigue in walking, a condition which has unfortunately very largely been imposed upon the prospector of to-day—as with few exceptions all the trails are apt to be wet in parts, and in many places they have much the character of a morass. It is no uncommon thing to plunge in to a depth of a foot or more, but with proper boots this is thought lightly of. The only other article that need be referred to is the mosquito net. While my own experience with mosquitoes in the Klondike region has been an entirely negative one, and the assurance is given that there are but few mosquitoes in the tract, it would still be an unwise oversight to go unprotected. Every one is familiar with the anomalies that surround the mosquito distribution, the insect appearing in certain years and not appearing in others. The short history of Dawson hardly permits us to assume the actual conditions which there prevail regarding the little pest, or of some of its equally plaguing rela-

tives—the midges and black flies—knowing that they are exceedingly abundant near by, and more particularly along the creeks of the American side (Alaska), it is well to be prepared for an easily possible visitation. A reference to this subject is contained in Chapter IV.

Too much caution can hardly be enjoined in the use of drinking water; indeed, it would be treasuring up a vast amount of safety to abstain as far as possible from using it at all. I am confident that much of the unnecessary sickness that prevails at Dawson, and which at regular intervals is heralded to the world under the name of “epidemic,” has been brought about by an indiscriminate indulgence in what to many is the only alternative to cocktails, whisky, or not over-refined lemonade. What is ordinarily called “fresh” water is now brought to Dawson from suburban surface springs and from the Klondike River; but much of the city’s drinking water remains as the seepage flows from the adjoining heights, and even the largely contaminated waters of the lower bog tracts are used. The heavy impregnation of mineral salts, not to mention the infusion of decayed and decaying vegetable matter, which analysis has shown to so largely deter-

mine characteristics in the different waters, exercises a most deleterious influence on even the strongest constitutions, and to many it is hardly less than poison. Dysentery attacks many, whether or not it is followed by what is here designated malarial typhoid.

The one seeking to make Dawson or the Klondike region a home for a long term must be prepared to face conditions which are in part very different from those which confront the casual traveller. Far from an open market, he must realize that forgetting to provide may mean to him much more than simple inconvenience. Therefore, he should scan his lists well before leaving for the interior, and it is well to impress upon him the fact that, with the low rates for oceanic freightage, the larger Pacific ports, and more particularly Seattle and Victoria, still present many advantages over Skaguay in the matter of outfitting. In fact, the two towns here mentioned have so far distanced their competitors that they are to-day the only ones which can truthfully claim to being fully provided, and in this respect far outrank any of the cities of the eastern United States. Their one defect is that they are too well provided, inasmuch as they offer and urge



the sale of articles, presumably on the evidence of successful miners, many of which are wholly worthless for the purposes for which they are intended. It will be well for the ingoer to make his own inquiry of residents and returning miners before launching into expensive purchases of things which are almost sure to be in great part discarded. This applies equally to mining materials, food supply, and clothing.

That which has tended so largely to bring about hardship on the trail of 1898 was the size of the pack. Many who had perhaps never before carried more than a few pounds at a time, and that on a good road, were now struggling under weights of fifty, sixty, and even eighty pounds; and journeying over a trail which was either largely mountainous or boggy to an extreme. It was at times pitiful to note the toil to which man, young and old, had subjected himself in the effort to prove himself successful. And yet many will to-day not deny the fact that it was just this pack which in a large number of cases prevented success, inasmuch as the severe strain of the burden, the weary wear on the system, could not but tend to shatter any effort at legitimate prospecting. Foot-sore and body-sore, the toiler by the wayside was



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Summit of the Chilkoot Pass, with impedimenta of prospectors, April, 1898.



only too glad to reach a point of destination, without troubling himself to any degree with what might lie off either to the right or to the left. In this way a large part of the territory, despite the number of prospectors that were continuously pouring through it, remained unprospected, and so it remains to-day. From time to time we shall hear of discoveries made but little off from the beaten trail. In my journey over Dome Mountain I actually overhauled a prospector who was moving by slow stages, and without assistance of any kind, an equipment weighing somewhat over four hundred pounds. Whatever reason there may have been for so overloading in the past, it can not continue to exist for much longer, as the facilities for getting around and obtaining provisions will be such as to permit of a fairly independent travel, or at least of a dependence upon others that will not be the cost of bankruptcy.

Despite the shrinkage in prices and values that must necessarily develop as the result of the progressive opening up of the country, the ingoer will do unwisely unless he provides himself with the sturdy support that comes from a respectable bank balance—a balance that is actually such after arriving in Dawson. A

shortage of funds, whether such funds are intended merely to cover the current expenses of a protracted period or for investments, for which not infrequently good opportunity offers, is apt to place one in a region that is still so comparatively inaccessible as Dawson in an embarrassing, if not indeed precarious, condition; and many a good opportunity has been forfeited or turned over to other hands for no other reason than that it lacked at a required time the proper pecuniary support to maintain it. The exorbitant rate of interest that was charged on loans by money-lenders during the middle and the latter half of 1898, in nearly all cases eight or ten per cent. per month, did not prevent borrowing, and it is a forcible illustration of the pressure which a money condition imposes. A good deal of the independent wealth of some of the more fortunate Klondikers has been inspired by the brokerage or "banking" business.

What the amount of one's bank balance should be on entering Dawson must depend entirely upon the completeness or non-completeness of the equipment of the one so entering, and his personal and special wants. Assuming that he has well provided himself, and that he can put up with the inconveniences other



than those that are dealt out by hotels, public restaurants, and lodging houses, he will hardly be considered extravagant if for a modest sojourn of the better part of a year he will have provided himself with five hundred to a thousand dollars with which to meet contingent expenses; and, within limits, the larger the amount above this the better. Log-cabins can now be rented or even purchased at comparatively low rates, and it is a not uncommon practice for two or three parties to unite in the occupancy of a single roof. Expenses are in this way very materially cut down. With such share, and a full supply of provisions, the cost of living is reduced to a minimum, and, except in the way of special purchases—for firewood, stoves and hardware, medicines, etc.—need not much exceed the lowest with us.

The miner or claim holder is confronted with an expense which is frequently lost sight of in the preparation of estimates: it is that of holding the claim or, rather, of performing the necessary annual work—the work of “representation,” as it is generally called—which the law makes obligatory. Continuous work extending over three (consecutive) months, of which there shall be no relinquishment for a longer

term than seventy-two hours, is a part of the statute of holdings. Almost anything done on a claim has up till now been considered a part of this work—as clearing, fencing, building cabins, prospecting, etc.—and where the locator has established himself on his particular claim, this work, performed by himself, is not a source of expenditure; where, on the other hand, he may be a resident of Dawson and still have claims outside, the work must be provided for by an agent or representative. This is the source of the special expense. Oftentimes, although applicable in most cases to such claims only as have already been proved to be productive or give promise of yielding, a “lay” is given out in payment for the work performed; or it may be that a general distribution of profits is agreed upon between the locator and the one employed by him to do the work. Where no such lays or agreements can be arranged, direct payment must be made for the required work, and this frequently means as much as five hundred dollars the claim, and has meant considerably more. Hence, holding many claims is not at all times a source of wealth or even unalloyed pleasure; that it at all times costs money for one purpose or another is the ex-



The Chilkoot Trail.—Power house of the aerial tramway.



perience of almost every one. There has been much evasion of the law regarding representation work—and equally so of that which exacts ten per cent. royalty to the Crown of the gross output (beyond a certain amount) of the individual claims—but probably in the future the statutes will be more rigidly enforced. A moderate leniency has certainly tended to a better feeling among the miners.

The question of the selection of properties or the choice of ground for location should be decided only after a personal examination of the ground, where this is possible, and little dependence should be placed upon reports of what claims contain or their “prospect,” or on the equally alluring *has not been prospected but well located*. Much ingenuity has been displayed in the “proper” presentation of claims, and a considerable amount of salting, both in the making of auriferous reefs and in feeding sluice-boxes, less extensively also in chlorinating, has already been practised. At the same time, it must be admitted that a not inconsiderable number of what have proved to be the better claims were either wild-cat locations or purchases seemingly of little value at the time of taking, and it would be anticipating an almost inscrutable



result and trespassing upon folly to dissuade, where a certain amount of capital is on hand for speculation, from assuming the burden of claims simply because they have not given evidence of being good. Claims that are known to be good through actual work, or are supposedly good by reason of a position almost in touch with a good claim, necessarily have a high valuation, ranging anywhere from three or four thousand to fifty thousand dollars and more. On the other hand, claims that are not known by prospect can frequently be had for a few hundred dollars, and even in locations where the better-knowing have reason to expect good results. A close personal acquaintance with the region of the claims and with the people having them is a piece of advice that few who venture in will regret having taken.

All placer-claim holdings are annual leases only, and the rights of temporary ownership must be renewed every year with the obtaining of a new record at the Recorder's or Gold Commissioner's office. This record must have an official inscript reciting that the past year's representation work has been properly accomplished. The books of the Gold Commissioner contain all such entries on the filing of claims

as may pertain to them by reason of assignments, transfers, options, etc.; therefore, it is essential for the buyer, where a purchase is being consummated, to obtain from the Gold Commissioner a record showing the claim in question to be clear and free of all encumbrances. An "abstract of title" is theoretically obtainable at any time; but without legal aid, and sometimes even with it, several days' effort may be required to gain possession of the required document. It is fortunate for the prospector that legal service, measured by other standards, is the one thing in Dawson that is markedly low in its purchase price—no higher, judging by my own experience, than in any of the larger cities of the outer world.

## X.

### THE CONDITION OF AND METHOD OF WORKING THE KLONDIKE PLACERS.

PRACTICALLY all the gold that has thus far been obtained in the Yukon region, whether in the Klondike or on the American side, is alluvial gold—that is, gold from river and creek bottoms and the adjacent loose hillsides (benches, terraces). The reports that have from time to time been circulated and gained credence regarding the discovery of reef or vein gold, and of an almost ubiquitous “mother lode,” are founded either on fancy or on the anticipatory realization of a wish and hope, and stand unsupported. It is not to be understood from this, however, that gold has not been found *in situ* in some of the quartz or dioritic veins or dikes, or that much more may not be found, and perhaps even to justify a future introduction of milling and extracting machinery; but up to the present, mining operations have been confined to the placers, a condition

which, even with the existence of rich reefs, would of necessity be enforced by the absence of working machinery.

The Klondike placers partake in their broader characteristics of the structure of placer deposits generally, although superficially they are masked, and present anything but a "prospect" to the searcher after gold. The dense overgrowth of trees, bushes, and moss has largely buried them out of sight, and one could readily travel the region from end to end without suspecting the wealth that was contained within it or even noticing the conditions that allied it with other gold-producing regions of the globe. Hence it is that so many of the old-time miners of California and elsewhere, deceived by the surface appearances, ridiculed the somewhat indiscriminate prospecting efforts of newcomers and indulged in sarcastic remarks on the progress of searching for gold in "moose pastures," etc. The vale of Eldorado was one of these moose pastures. Beneath the capping of vegetation along the creek bottoms the placer "gravel"—an association in principal part of the broken (angular) and water-worn *débris* of the rock of the region (the latter principally in the form of discoid pebbles and boulders)

and earth or clay—is of varying depth, ranging from a few feet to twenty-five feet or more, when what is called “bed rock” is reached. I did not make any accurate measurement of the depth of the diggings, but if memory serves me right, few of them either reach or much exceed thirty feet. The deepest prospect holes are on the benches or hillsides, and some of these exceed fifty or even sixty feet. One of these, on what is now known as Gold Hill, the spur lying northward of the Eldorado at its junction with the Bonanza, on the claim of Mr. Maden, almost immediately adjoining the very rich Lancaster claim, had been sunk to sixty-nine feet before my departure from Dawson—all of it through what was seemingly wash-gravel, and yet bed rock had not been reached. The pitch of the hill slope was here, however, pretty steep; and allowance must be made for it in any calculations of thickness of horizontally-lying deposits.

What by the miners and prospectors is called bed rock is not always the true basal rock of the locality, and more than one property has been abandoned or transferred as the result of incorrect determination of this much desired horizon. The irregular surfaces of the bed rock

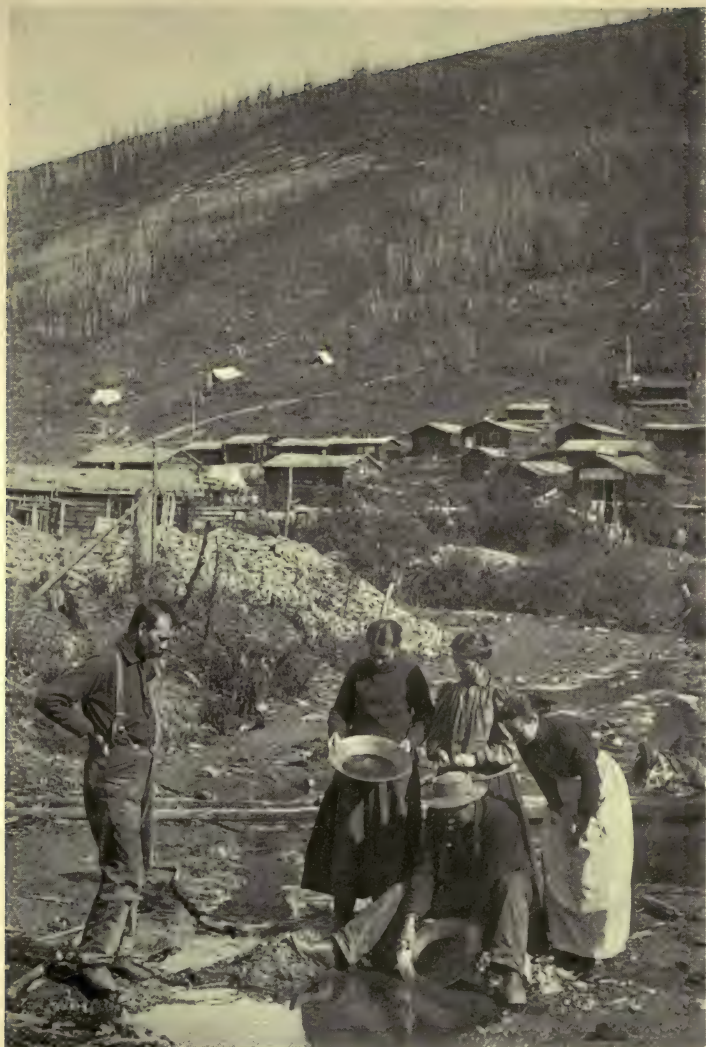


accumulating here, as in placer deposits generally, by far the greatest quantity of gold, its presence is eagerly sought after; it is, in fact, the crux about which success or failure centres. Where the bed-rock horizon is deficient the claim is considered worthless; where the overlying deposits show good colours or pan prospects, a rich return is expected on the approach of bed rock.

Hence, the effort to get to bottom. Many of the properties which I had the opportunity of inspecting and studying, and which were supposed to be working at bed-rock level, were in fact still considerably above that line, a sheet of large rock *débris*, which in some way had slid into the finer drift, leading to the misconception which controlled the miners' work; this false bed rock was in itself, however, well rich in gold. A hillside claim on French Hill had been abandoned because bed rock had failed to show up gold, but a newcomer drove his shaft through the assumed basal layer of about five feet thickness and found the desired metal some distance beneath its under side. The new purchaser was working lustily at the time of my visit.

The great bulk of the placer deposits is in a frozen condition, and it is this that makes the

extracting of gold here, as in Siberia, so laborious a work. The frozen earth begins in places hardly more than a foot from the surface, elsewhere at two feet or thereabouts, and continues summer and winter down to the bottom of penetration. It is no uncommon thing to come across great chunks of almost pure ice, some of these a foot, two feet, three feet, or even more in thickness; and it is not surprising that they are frequently referred to in the region as glaciers. I suspect that many of these larger buried ice sheets, free from detrital material, are in reality back flows of water, and in some cases frozen pools over which gravel, earth, and vegetation have accumulated. It is a belief with a large body of the miners, founded upon experience and conditions prevailing elsewhere, that burning off of the superficial moss would permit of a summer thawing of the deeper soil, to the end of keeping it virtually open for the future. This result has certainly been obtained in many sections of the Northwest Territory, and also in Siberia, and of course to almost every advantage in mining. It should be noted, however, that much or most of the water that is to-day used in the "summer" works of the hillside claims for rocking and washing is seepage water, or



"Panning" at the junction of Eldorado and Bonanza.



the water of melting which oozes out on the faces of excavations that are exposed to the heat of day.

The frozen soil is not so universally present as some believe, or at least not so persistent in nearing the surface. Professor Spurr had already noted some exemption cases in the Mastodon Creek region of the American side, Birch Creek District, where also there are a number of heated waters coming to the surface. Some similar unfrozen spots are known in the Klondike region, from Hunker Creek to Eldorado. In a prospect hole on No. 6 Gay Gulch, which I descended to about forty feet, there was no evidence of a frozen soil, and the same characteristic was presented by a shaft among the "sixties" of Eldorado. In neither the one place nor the other were there traces of the presence of heated springs or of any form of volcanic activity.

The process of "burning down" through the frozen placers is familiar from the work that has been practised for years among the similarly placed gold fields of Siberia. Over the area of the prospect shaft, whose section measures ordinarily three to four by six feet, a wood fire is built, the heat from which melts out the



soil to a depth of a few inches, or at times to a foot or more. The materials of melting having been removed, a second fire is built, and the operation is repeated until the required depth has been obtained. This process is a necessarily slow and tedious one, made doubly so by the task of emptying the pit by means of a hand bucket and windlass, and is one likely to tax the endurance of even the most patient miner. The better part of a season may be spent in sending down two or three prospect holes, and it is well known that in certain claims as many as ten and fifteen shafts have been sunk before there was a paying indication of "colours," and in some claims after all this labour nothing was found at all. The difficulty of controlling the water of melting, or rather of removing it from the confined areas of the pits, has relegated the work of burning largely to the winter season, when the excavations can be kept reasonably dry; but on the benches and hillsides, where an off flow is possible, the operation is mainly that of summer. Where the pitch of the bench is steep a few have profited by the condition to send in their prospect holes as horizontal drifts or drains, in which, while the material to be removed is

greater, the facility for doing work is comparatively easy.

Cross cutting or uniting the different prospect holes by lateral burning and picking is one of the common methods adopted to locate the so-called "pay streak" in the creek claims. This subterranean tunnelling is also an arduous and time-consuming task, and one that, from the presence of noxious gases evolved in the process of burning, is not entirely free from danger. Several cases of asphyxiation were noted during the period of my stay in Dawson. A number of ingenious contrivances, such as reversible oil blasts, have been brought to the region in the effort to improve upon wood-burning; but up to the present time little success has marked the innovation, for which doubtless, the high tariff on all articles to be transported is mainly responsible.

In the earlier accounts emanating from the Klondike region the mining itself is described as being a tunnelling operation, it being represented that long drifts are worked along bed rock, and that the materials taken out from them in the winter season are piled up on the surface prepared for the spring or summer sluicing. This would convey the impression that

the mines are, like coal drifts, closed from the surface. As a matter of fact, however, the work has now progressed to the extent that most of the important creek claims are long rifts or drains opening up to the surface, and they much resemble the marl diggings of the eastern United States. The Bonanza and Eldorado valleys are completely cut open with such excavations, and on all sides lie the heaps of rejected *débris*. Long lines of flumes and sluice-boxes are almost everywhere features of the landscape, not necessarily attractive, or even befitting the beautiful verdure that rests here and there undisturbed by man's enterprise or greed. The width of these excavations is necessarily determined by the configuration of the creek bed or bottom, whether open or confined, and by the extent and direction of the pay streak. The allowable limit "from rim-rock to rim-rock" is rarely used except in narrowed parts, and even in the best-paying properties the pay streak is ordinarily of only moderate width—twenty or thirty feet or less. Exceptionally it spreads out to a much broader distribution, and there are claims, as on Eldorado and Hunker, where two such bands or streaks have been located; at least, it is so reported. We are as yet hardly

sufficiently acquainted with the placers to know just what may be the full boundaries of these ancient water flows, and doubtless the value of many claims will be adjusted in accordance with new discoveries made regarding them.

While, as has already been stated, bed rock, and with it the true pay dirt, are more commonly found at depths of twenty feet or more, it is true that in some instances the depth of find is very much less, hardly reaching five feet. This is the case with one of the best properties on Hunker Creek, and the fortunate possessor informed me that two dollars to the pan was common at hardly more than three feet. Two distinct qualities of gold are associated in this claim in almost separated zones, and I am led to believe from this fact and other facts that ally themselves with it that much of the product of the creek claim is an immediate derivative from the near-by benches. Such commingling, ever since the discovery in April to June of last year of the rich high-level drift, has been recognised by the miners, and they have even framed the saying—which is not fully borne out by facts—that where the creek claims are good, the adjoining bench claims are barren, and the reverse. No more striking evidence of the

wealth acquired by some creek properties by down-wash from the neighbouring benches could be obtained than that furnished by the condition of the claims on Bonanza opposite Skookum Hill. The wealth of the McDonald claim and of the "Dick" Low fraction is known to everybody in the region.

As regards the pay streak on the hillsides and benches, I am not so convinced as others appear to be that it represents merely a former stream bed. There is much to indicate that it may be in great part a "blanket" deposit, and certain it is that some of it has been washed or drifted in from a direction at right angles to the course of the stream on whose slopes it now lies. The view that it has a much broader extent than could be derived from the past flow of the associated streams is held by some of the more intelligent miners, and is further supported by a number of the later prospects. Should this non-relationship with existing or antecedent water flows be ultimately proved, as I feel confident that it will be, then it will suddenly be realized that a great territory is still open for prospect and location. The discovery of the wealth of the high terraces in the spring of the past year, when Staley and Lancaster,



prospecting respectively on French and Gold Hills, were considered to have strayed in their minds, came with equal suddenness, and has taught the lesson of doubt in preconceived notions. The condition is one that might readily have been foreseen by a practical geologist, to whose views respectful consideration would have been paid by the miners.

The method of placer mining that is followed in the Klondike region is still of that primitive type which naturally associates itself with a first rush, and is in part a necessary consequence of the distinctive characteristics of the country. The instruments of the miner are the pick, shovel, gold pan, and old-time rocker and sluice-box. Of new or improved contrivances practically nothing is seen or known, and the judgment of many is that even with the possibility of easy importation into the country most of the claim holders would prefer adhering to methods now in vogue rather than to attempt something new. But there is no doubt that this conservative position would immediately change when the advantages of saving would be practically demonstrated, and the novelty of first recklessness would disappear. There is no way of easily ascertaining how much of the gold

is lost from individual claims by the present broad method of working, but it certainly must be considerable, and some experts profess to believe that one third of the product goes over into the tailings. This is doubtless an exaggeration, but that a very material part is lost is daily proved by the foreign work of rockers on the tailings, a concession that is either granted on a basis of percentage on returns or as a free gift to those who have been unsuccessful in locating and may be in temporary want. Recognising that "good wages," as it is termed, is frequently made out of these tailings, and again with primitive methods, no further evidence is required to prove the waste.

The initial prospect with the gold pan is that which generally decides a location; with "colours" at first sparingly, and then increasing in the direction of bed rock, a lucrative site can generally be considered assured. On the other hand, the reports of "nothing in the pan," although they are so readily accepted for a negative valuation, are in many cases no indication whatever of the barrenness of a property, as a large part of the prospecting is as deficient as is the operation of mining. Prospect holes of only five or six feet depth, and even less, are



Diggings in Skookum Gulch.



numerous, and naturally, with bed rock lying perhaps fifteen or twenty feet lower, can hardly give an indication of what is below. The lesson of patience and perseverance can not be taught to some, and they prefer to wander from place to place and try a little here and a little there, rather than to proceed with what appears to them a hopelessly discouraging work. In this way many good fields inefficiently prospected have been left to more persevering and fortunate followers, who had merely to deepen holes or develop new ones in order to come into possession with knowledge. In the first period of the Klondike settlement Eldorado, although it had already well shown up in certain prospects, was abandoned in favour of Adams Creek, to which a stampede had set in. Almost immediately afterward the new creek was considered all but worthless, although prospecting had hardly been begun on it, and a return—wisely in this instance—was made to Eldorado. Newer prospects on Adams have determined for it a new life, and the indications now are that it may develop into a more than good creek. This is the history of more than one creek in the Klondike region—the history of defective or inefficient work.



An opposing vice is that which tends to exaggerate the good qualities of certain locations or the returns from development prospects, a condition that can be readily understood at a time when so much effort is being put out to secure good sales or leases. Thus, we hear of "pans" running up from five to one hundred and fifty dollars, which, even in the extremes, may be true in a very few exceptional cases; for one marvels at what is occasionally seen coming out. Good panning prospects need not carry any such amounts as these, however, nor the suspicious \$1.20 to \$2 per pan "before bed rock was reached" which is so extensively put out as bait to outsiders. Many a wealth has followed the more modest thirty cents to the pan, and even in locations where not the best advantages for sluicing could be obtained "colours" of gold to the value of only five cents per pan are anxiously sought after; but it is true that much of this is lost through inexperience in handling the gold pan, which is an art in itself. The rough handling that in great measure overcomes the fatigue to the wrist which slow rotation imposes also overcomes the finds; for despite its heavy weight and the assurance of prospectors that none of it slips

over, some of the gold does manage to escape in the wash.

The rockers in use, now principally on the hillsides and benches, are of the ordinary type of field construction, neither better nor worse than those which are commonly used in a newly invaded field. They are mostly single hand and are fed by water ladled in from an accumulated pool (mostly seepage water). The various types of "improved rockers and washers, with cylinder-section sieves and metal plates," have not yet reached Dawson, or if they have they were not in operation. The conditions of weight and difficulties of transportation, and the tendency to fall into a deranged and not immediately repairable state, are elements that will oppose a new introduction until the period when means of reaching Dawson vastly in advance of those that now prevail will have been established. I saw no "long-toms," although some may be in use, and from all the information that I could gather mercury was still an almost entire stranger to mining operations of any kind.

The sluice-boxes of the creek claims are mostly constructed of twelve or fourteen foot sections, and are of lengths varying to suit the

special requirements of work and position. A pitch of eight to eleven inches per section is, I should say, the one most generally adopted, and this with four or five lengths is considered in most cases sufficient to wash out and hold the gold. In some instances I noted that not more than three lengths of sections were used, and through these a very powerful head of water was forced. There can be no doubt that much gold escapes to the tailings from such short and powerful runs, a sort of inspiring declaration to the contrary from liberally disposed claim holders notwithstanding. An intelligent worker on one of the richest Eldorado claims is my informant for the fact that a forty-two-dollar nugget passed the sluice of a claim on which he was then employed. This reckless waste is begotten of the facile wealth which has fallen to the lucky proprietor, for it is not alone on his gold properties that he is prodigal of his riches, but equally so in his cabin and in the town. Presenting with nuggets is a common occurrence, and so is the lavish expenditure of gold dust for trifles of all kinds. Hence the command, "Go ahead and work on my tailings if you can find anything," which so pleasingly comes from some otherwise harsh lips.

Most of the riffles in use in the sluice-boxes are the longitudinal ones of "false bottoms," bound together by transverse pieces. This type, which seems to gather the gold about as well as the transverse or diagonal riffles, is the easiest to handle in the clean-up, while it most effectually protects the floor of the sluice from rock abrasion. Where the sluice-box is run at a high level above the floor of the diggings and out of shovel reach, it is necessary to construct a "staging," to which is thrown the pay dirt, and from which by rehandling it is cast over into the box. In one or more of the Eldorado pits two stagings, one above the other, have been found to be a necessity.

Deep cuts of this kind can hardly escape the inflow of seepage and other waters, and it is made imperative for the possibility of further operations to have some device for clearing the bottom. In the more advanced mines the California wheel and bucket-belt pump has been introduced, and its work seemingly gives full satisfaction. There are a number of these in active or passive operation. At the opening of operations in the Klondike region the matter of sluice-boxes, flumes, and water wheels was hardly an important consideration, beyond the

necessity of having them and the labour that was entailed in their construction. Timber was plentiful and there was little or no difficulty in obtaining the necessary lengths and thicknesses. Now, however, with the extensive use that has been made of the woodland, with burning and deforestation, the material of boards has become a scarcity in many parts, and no relief is afforded either by the high price of lumber—two hundred dollars per thousand feet—or the exorbitant rates that are charged for hauling. Twenty cents a pound for packing was the summer charge from Dawson to the Grand Forks (the junction of the Eldorado with the Bonanza), a distance of some fifteen or sixteen miles. The winter rate is about half of this, but even with this reduction it will be readily recognised that flume and sluice-box construction, apart from the making of cabins, must for some time be a matter of more than ordinary concern.

As regards the quantity of gold that is contained in the individual claims, in the associated claims of any one creek, or in the combined claims of the different creeks and hillsides that make up the Klondike region, it would in the nature of things be hazardous to venture much beyond the vaguest conjecture. The amount



of work that has been done is much too limited to permit of a clear view as to possibilities, or even to define actualities. That the natural wealth is a very large one, no one with eyes to see can deny; but in how far the region falls short of or surpasses other wondrous regions of the earth's surface must be left for the future to determine. That individual claims have yielded in some instances as much as one hundred and fifty to two hundred thousand dollars' worth of the precious metal rests on the testimony of men whose word can not reasonably be doubted; and the careful observance of the work with its results as it is now being prosecuted would lead one to believe that there has been no overestimate or exaggeration. Whether or not the hope will be realized that some of these properties will yield a million or more before their product has been exhausted—a hope and wish that are entertained by claim holders at various points of Eldorado, Bonanza, Dominion, and Hunker—is a prophecy in which I do not feel disposed to indulge at present. Nor am I prepared to answer the question that has been so frequently put to me: Which of the Klondike streams is the best? There are a number that are extremely good, there are

others that are less good, and many yet will be discovered or prospected that will prove to be good. The output for the past year can, I think, safely be assumed to have been in the neighbourhood of nine or ten million dollars, perhaps more; but that it will be vastly greater in the current year (1899) is certain. Some of the most promising streams, such as Dominion and Sulphur, in view of a possible reduction of the royalty tax of ten per cent, have, up to the present time, hardly been more than scratched; but now that the matter of the tax has apparently been settled—to remain in force—it can be assumed that they will fall in line with the other streams and be strong competitors. The increased facilities for carrying to and obtaining supplies in the region, with consequent reduction in wages for labour, will also very largely tend to develop the product, as must likewise the introduction of less crude methods for obtaining the gold. Many of the old fields will be worked over again in their “dumps,” and certainly with more than good profit. An estimate for the gold output for 1899, measurably entitled to consideration as emanating from an expert, is as follows: Eldorado and Bonanza Creeks, \$5,000,000; Big and Little Skoo-



Sluicing on the Bonanza.



kums, together with Gold and French Hills, \$5,000,000; Dominion, \$4,000,000; Hunker and Quartz Creeks, \$5,000,000. It will be observed that Sulphur Creek is entirely eliminated from this enumeration, as are likewise Eureka and Bear and a number of minor streams in which Klondikers have considerable faith, and which, from favourable prospects already obtained, are not unlikely to prove moderately productive. It is a wise precaution in this region not only to carefully scrutinize the reports of wealth, great and greater, which periodically break in upon the open market, but to sift carefully the opinions that are so freely expressed regarding the barrenness of certain districts. Much of the negative opinion is formed purely on conjecture or upon inefficient prospecting. It takes but a moment to start an opinion and to have it carry weight in certain directions; negative stampedes are precipitated just as suddenly as positive ones, very frequently to the dire regret of those who have abruptly terminated work on an old property in favour of a new one. During my brief stay in Dawson there were three stampedes to Dominion, to Gay Gulch (tributary to Eldorado), and to Adams Creek (tributary to Bonanza). Up to that time Gay Gulch



and Adams had been given, as the miners express it, the "black eye." Seemingly it was my own examination of these creeks, and the freely expressed belief that in my opinion they looked and even promised well, which led to a sudden reoccupancy; and, in truth, coarse nugget gold has been found on Claim 14 of Adams, a circumstance hardly to be wondered at in view of the fact that Claims 1 and 2, at the mouth of the creek, had for some time been sluicing coarse gold. I mention these occurrences to indicate the uncertainties which still surround our knowledge of, and the reports that are circulated regarding, the condition and wealth of the region.

As to future possibilities, little can be premised. A large number of the more influential journals of the United States, relying upon information that had been sent to them from Dawson, warned ingoers in the early part of 1898 that the region for a hundred miles or so about Dawson had been fully staked or occupied, and that consequently no further opportunities for location were presented. This well-meaning but misjudged advice may or may not have influenced many in their movements, but it is certain that at that time, and for some

time considerably later, many of the best claims were being located—those of the hillsides and high benches, which had till then been almost entirely neglected. And even to-day, nearly a year later, it may be accepted with certainty that many good locations in the Klondike territory are still open, although it may not be easy or possible to say just which they are, any more than one could have said prior to 1896 what Eldorado would be. Yet this open prospect should not be an impelling impulse; for the prospector, even with plenty of natural wealth immediately about him, may without the necessary support and stamina make but a poor shift for himself. Perseverance, the where-withal, and a good physical constitution are necessary conditions in the attainment of success where luck—and there has been much of it in the region—does not come into account.

A prospect for large capital lies in the conception to hydraulic the bench and hillside placers. I believe that a sufficient head of water could be obtained for this purpose for at least a part of the Eldorado-Bonanza section, and this opinion is shared by some of the most qualified experts in this branch of placer mining of the Western United States. With hydraulicking

much territory that is practically unapproachable in the present system of rocking and rough sluicing would be brought under easy control, and there can be little doubt that a good part of this territory is gold bearing. I refer more particularly to the hilltops, as on the arc uniting French and Adams Creeks, which abut upon what is now the gold-bearing crest. Again, many of the now working properties which eke out but a moderate return on account of the difficulties of working in small measure—most of those claims being squares of only one hundred feet \*—would be made largely profitable through this concentration of labour and the forceful method to be employed. It remains to be seen what action the individual claim holders would take in the premises, as it is certain that exacting valuations would be put on the different properties in the event of an offer to purchase; and with failure to accomplish this, there would doubtless be an insistence on personal rights and claims for pro-

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\* The bench claims of French, Gold, and Skookum hills. Those of Oro Grande, and of some other parts of Eldorado, etc., are 250x250 feet; the later hillsides of Bonanza, Adams, etc., are 250 (along the stream) x 1,000 feet. These varying dimensions are in conformity with the legal limitations of different periods of location.

tection of boundaries. That some judicious compromise to the end of still leaving a broad margin of profit can be effected, there can hardly be a reasonable doubt.

The possibilities of dredging the larger streams, such as the Yukon itself and the Klondike, will without doubt engage capital some time in the future. The feasibility or easy accomplishment of this work remains to be determined, as the frozen bottom, if it ultimately be proved to be such for most of the course, is a factor in dredging operations which has thus far escaped our ken. On the other hand, it may be accepted as a fact that a considerable depth of loose material must here and there, even removed from the bars, be accumulated over the floor of such receiving streams; and it is then only a question to what extent this superficial stratum, which is in a measure accentuated every year, is charged with gold. It is obvious that with the improved dredgers, which under normally favourable conditions remove from one thousand to fifteen hundred cubic yards of material per day, and at an expense of possibly less than one hundred dollars, very little gold need be present to give a large return. The measure of quantity is very differ-

ent from that which is necessary to make a placer pay. Instead of thirty cents to the pan, hardly more than double this amount to the cubic yard might yield profit in good dredging. The factors of expense in repairs of machinery and the many inscrutable things that happen in enterprises of this kind must be given a broad margin in the calculation of profit, but, withal, the experiment is worth considering, as virtually nothing positive is known regarding the possibilities that lie in this direction. The bucket dredge, with overhead chain grizzly, would, I suspect, give the best and most immediate results; but I doubt if a ready method could be devised for reaching or clearing bed rock. Suction pumps would, under the special conditions of the region, probably be of only doubtful value. The most promising field for dredging in the immediate Klondike region would almost certainly be the Klondike River itself—which can not have escaped receiving a part of the wealth of the Bonanza (and Eldorado) and Hunker Creeks—and the shoals and islands of this stream offer a good prospect. The depth of water would easily float one of the small bucket dredges, and, with damming, even those of larger capacity might be used. The



smaller streams are, of course, not available for the flotation dredge; but in some parts, where the soil is not too completely frozen, as in the lower reaches of the Bonanza, a "dry" bucket dredge with overhead discharge might be advantageously used, as enough water could be at any time "pooled" to serve the requirements of working. The process of wing damming is now resorted to in these parts to a limited extent.

## XI.

### OBSERVATIONS ON THE PHYSICAL HISTORY AND GEOLOGY OF THE KLONDIKE GOLD FIELDS.

THE gold fields of the Klondike or Troandik district, as officially designated, lie along or immediately about the waters, whether direct or tributary, of the Klondike, an eastern affluent of the Yukon, which discharges into the "father of northern waters" at the site of Dawson. The Klondike itself, whose upper waters are as yet only imperfectly known, seemingly carries but little gold, the main quantity of the precious metal and that which has made the region famous being contributed by one of its southern arms, the Bonanza, and by a tributary of this, the Eldorado. Hunker Creek, draining a mountainous district several miles to the eastward of the Bonanza, and like it a southern affluent of the Klondike, finds promise of a wealth but little if at all inferior to that of the Bonanza. In a broader or more popular





sense, the Klondike region not only embraces the special district so designated in the books of the Gold Commissioner, but also the entire tract which heads up to the sources of the streams that have before been mentioned, and thereby, with Quartz, Sulphur, and Dominion Creeks as tributaries of Indian River, takes in the greater portion of the Indian River mining district, and with Baker, Reindeer, and other creeks on the west, the official districts indicated by these names as well. With this limitation the region roughly defines an area about forty miles square, whose northern boundary lies somewhat to the north of the sixty-fourth parallel of latitude, and on the west reaches to within about thirty-five miles of the international boundary, the one hundred and forty-first meridian of west longitude.

This area of approximately fifteen hundred square miles, which but little exceeds that of Rhode Island or of the county of Cornwall in England, may be broadly characterized as being gently mountainous, with elevations of five hundred to fifteen hundred feet, and in the highest parts of about twenty-two hundred feet. Its lowest depression is the valley of the Yukon, which, in itself occupying a position about four-



teen hundred feet above the sea, gives to these points absolute elevations of three and nearly four thousand feet. Dome Mountain, or as it is frequently designated, simply "The Dome," and less often "Solomon's Dome," "King Dome," and "Mount Ophir," appears to be the culminating point of the entire region; and its prominent position at the water parting of Bonanza, Hunker, Sulphur, and Dominion Creeks makes it a noble figure in the landscape, and the most interesting single feature to the prospector and miner. No absolute determinations for altitude have as yet been made for it, but when crossing the summit it seemed to me that it could not be much under four thousand feet, and I believe that Mr. Ogilvie gives to it about thirty-five hundred feet. The landscape which this mountain dominates is surpassingly beautiful, and I know of no finer view from similarly low mountains than that which this one commands. The sharply incised wooded valleys of the different streams that head up to it tear the mountain into projecting buttresses, and in the ridge that leads off from it southwestward contracts it to the extent of forming for half a mile or more a narrow backbone or saddle. In this respect it reminded me much of Mount

Katahdin, in Maine. On a clear day the distant main mass of the snow-capped Rocky Mountains is sharply outlined against the northeastern sky, a most impressive setting to the verdant slopes that trend off toward it, only to disappear in the belt of plain that separates the two mountain systems. I was unfortunate in not getting the full benefit of this view, as at the time of my first crossing the atmosphere was very cloudy, and on the second it was so surcharged with smoke from forest fires in the valleys of Gold Bottom, Quartz, and Sulphur Creeks that hardly more than the foreground was visible.

A succession of five or six knobs runs out from the ridge to which reference has been made and which trends off in the direction of the head waters of Eldorado, and these, together with the main Dome, are sometimes spoken of as the "Seven Domes," but they have no particular significance in the orographic detail and can not even be said to be clearly defined to the eye. Dome Mountain is held in a respect bordering almost on veneration by the Klondikers, inasmuch as it is generally thought to be the mainspring of the gold supply which is contained in the streams that fall off from it,

and this means nearly all the good and the promising streams of the entire region. And, in truth, there is for the moment no way of absolutely disposing of the miner's suppositions, nor can the circumstance that little or no gold has yet been found in place either on or in the mountain be given much value in the discussion of the probable origin of the gold, inasmuch as the same negative condition confronts us in a study of the rocks of all other parts of the same and adjoining regions. Assuming that alluvial gold is in the main a derivative from reef gold, it is certainly strange that streams flowing in well-nigh opposite directions, and yet rising within very short distances of one another, should be so largely charged with gold, unless they have obtained it from a common source; nor can the fact, as received and reported by most miners, but of the full import of which I have not yet fully made up my mind, that the different streams carry different classes of gold, be argued away as having no significance in this connection. Claim holders profess at most times to be able to distinguish between Eldorado gold and that of Bonanza, between the gold of Bonanza and that of Hunker or Dominion, and so on; and there is no question

that marked differences in colour and in the contours of the coarse flakes and nuggets do present themselves, and even in narrower limits than has here been outlined. Thus, the gold from French Hill, abreast of Claim 17 on Eldorado, has a distinctiveness that is largely its own, and hardly follows the gold of the rest of the Eldorado tract; and the same is true of the gold of Skookum Hill in its relations to that of Bonanza, and also of that of Victoria Gulch. Moreover, the recent assays that have been made by the Bank of British North America and the Canadian Bank of Commerce, in Dawson, of the gold of the different creeks and gulches show plainly that marked differences as to fineness are distinctive qualities—at least they appear to be such at the present time. Thus, while Eldorado and Bonanza gold generally assays but about \$15.50 or \$15.80 to the ounce, Dominion gold shows as high as \$17.80, and Hunker close to \$18.50; the gold of Bear Creek, a minor tributary of the Klondike, is reported to actually give \$19.20 to the ounce, falling only behind the almost pure specimens that have been reported from American Creek and Mynook, and to which a valuation of nearly \$20 has been given. If these assumed facts con-

tinue to be proved true, then they must argue in favour of a distribution of gold from largely localized spots or areas, a conclusion that is also pointed to by a number of other circumstances. On the other hand, there are some facts which point in quite the opposite direction, and some of these will be referred to later on.

The point of second eminence or prominence in the region is apparently the knob, capped with white quartz, which parts the head waters of French Creek (Gulch), Ninety Mile, and Adams Creeks, and on the lower slopes of which also gather the waters of Irish Gulch and of Big and Little Skookum. Roughly guessed at, the mountain seems to be about three thousand feet in absolute height. It commands a view only second to that from Dome Mountain, and from its spruce and poplar clad slopes the eye easily catches the scarred volcanic knob that overlooks Dawson and the terraced heights which run off from the western bank of the Yukon. Southward, appearing thirty to forty miles distant, one or more peaks stand out in marked prominence from the rest of the mountain masses, and one at least looks the superior of the Dome. The insufficiency of map and descriptive material would not allow



of their identification, nor could I tell positively if they were located north or south of Indian River, and even their position as regards the Yukon remains doubtful. In nearly the same direction a regularly formed conical mountain, of dark red or brown colour, eminently suggests a volcanic composition, but beyond supposition it would be hardly safe to go.

None of the mountains of the region even approximates the snow line, which would here probably occupy a position not much below six thousand feet, and on the northern face perhaps even rise to seven thousand feet. Not a vestige of snow was seen by me when crossing the Dome, not even in the most sheltered hollows, a condition that at first strikes one as strange, considering that in so many parts of our own mountains of equal or less elevation snow may be found lingering through a long period of the summer months. But here the greatly protracted hours of summer daylight and heat, together with the correspondingly diminished period of night, when a regelation might take place or melting at least could be arrested, have a marked influence in dissipating the winter's snows and ice when these are not particularly heavy. I did not find the August

heat quite so intense on the mountain tops as I had been led to suppose that it would be, but there was quite enough of it to satisfy an ample vegetation and to make heavy garments in walking more than a burden. Unfortunately, my thermometer was away from me at the time, and as sensation in this dry northern climate is so difficult to gauge by the standard of the mercurial index, I shall not hazard a guess as to the actual reading.

Taking the mountains in their entirety it is difficult from single points of view to determine for them any definite relation. There are so many valleys in close proximity to one another, some very ancient and others relatively modern, and with trends so opposed in all directions, that in the absence of a dominant ridge or mass this relation becomes very confused; and I was not in a position, with the limited time at my command and the deficiency of rock outcrops, to positively define any main line or axis of uplift. Yet I suspect that there is one such, with a generally east and west bearing, whose trend might correspond with that of the ridge already referred to which, with a southwesterly deflection, unites Dome Mountain with the mass that separates the upper Eldorado from





Chief Gulch. What strikes one as particularly interesting in the conformation of some of these mountains when seen from an elevation is their hummocky appearance. This is particularly noticeable in the mountains which close in the Eldorado and Bonanza valleys. With considerable actual elevations, they convey the impression of being merely swells or undulations of an open surface, very much like magnified morainic knolls in a glaciated country. This depressed type of mountain structure, with the evidence of its expanded valleys and gently flowing contours, carries with it the proof of long continued degradation, and of a history whose pages read far back into geological chronology.

With the evidences of antiquity before us, there are yet indications, amounting, it seems to me, almost to proof, that many of the more pronounced features of the region date their origin from only a comparatively recent period. Such is the case with a number of valleys that are tributary to the main ones, and even the latter appear to have been modified by late stream displacements. Taking the Eldorado or Bonanza, with their open U-shaped troughs and in most parts gently sloping banks, as types of the older valleys, it is surprising to note how



many of their tributaries have the deeply incised and narrow contours; and I am led almost to conclude that some of these are really of very late construction. The stream displacements, which, by reason of the indices they give to the finding of new placers, are now beginning to be so attentively studied by the miner and prospector, are emphatic in their testimony in this direction.\* One has but to note the triangular area that is included between French Gulch (tributary to Eldorado abreast of Claims 17 and 18) and Adams Creek (tributary to Bonanza at Claim 6 below Discovery) to be convinced of the actuality of recent transformations. Most of the miners regard the high-level gravels of this tract—of French Hill, Gold Hill (opposite to Grand Forks Village), Skookum Hill, and Adams Hill—so rich in gold as to make the claims fairly the rivals of the creek claims, as representing the ancient high-level flow of the Eldorado and Bonanza, but I am convinced that this is not the case (although

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\* Prof. Israel Russell has made the interesting observation that orographic movement may now be taking place in the region of the middle Yukon, about the Lower Ramparts, with the uplifting of a mountain range athwart the river; on this supposition he seeks an explanation for the detail of the Yukon lowlands.

it is certain that both streams mentioned did at one time flow at as high, and even considerably higher, levels). The materials that so largely distinguish these bench or hillside gravels (placers) are in greater part rounded boulders or cobbles of white quartz, with a marked deficiency of the fragmented schists and slates which make pay dirt and bed rock in the course of the streams below.

*Per contra*, the creek claims of Eldorado and Bonanza contain, as a rule, only an insignificant quantity of the rounded quartz boulders, while almost everywhere where excavations have been made the body and substance of the output are the flattened and discoid parts of the mother-rock of most of the region—quartzitic, micaceous, hornblendic, and chloritic schists, and with them a less quantity of gneissic and dioritic rock. The high quartz-capped knob to which reference has already been made as marking the water parting of French, Nine Mile, and Adams Creeks, has large quartz masses entering into its composition, whether as bosses, dikes, or veins, and to them, or rather their wasted parts, must we look for the source which has so generously supplied the materials of the French-Adams Hills benches. There has been

a bad break-up in this quarter, and the materials resulting from it have been swept into the confluence (delta) of the two streams which define the main valleys. Furthermore, the descending arcuate contour lines which are so well marked by terrace slopes on that face of French Hill which is turned to the corner of Eldorado and French Gulch, show plainly the receding course, in the direction of south, of French Creek (Gulch). On the hill slopes south of the position which it now occupies there is none of that deposit which lies to the north of it; the riches of French Hill are delimited by French Gulch, and even in the gulch itself there is nothing that can be compared with what is found on the heights. Again, on the side of Eldorado opposite to French and Gold Hills there is the same deficiency as regards the characteristic bench deposits, and this also holds true with the Bonanza opposite Skookum and Adams Hills. If these high-level deposits were in fact the ancient waste of the Eldorado and Bonanza we should naturally expect to find at least "outliers" on the less favoured bank of the streams, and surely in the case of the former some evidence of this deposition ought to be had on the hillsides, similarly contoured to those of

the north, which lie south of and immediately adjoining French Gulch.

Through virtually the entire Klondike tract and far beyond it on all sides there are evidences of high water flows. No more perfect presentation of high-level terraces can be had than that which defines the first line of heights, of perhaps one hundred and fifty to two hundred feet, which so beautifully impress the landscape of the Yukon about Dawson. The observer, from a still loftier elevation, notes these flat-topped banks, having the regularity of railroad constructions, following the course of the river as far as the eye can reach, here perhaps interrupted by a too steeply washed buttress, elsewhere washed to low level by some stream which has taken a transverse direction. A somewhat higher line of benches curves around the still higher points of eminence, and defines the course of water across country—such, at least, it is to-day. And all the way to the top, scattered evidences of the recent presence of water can still be found. I met with rolled or water-worn pebbles so near to the top (the actual summit and not the position of the signal flag) of the high peak overlooking Dawson that it may safely be assumed that they also occur

on the very apex (about eleven hundred feet above the present level of the Yukon), a conclusion which is more than strengthened by the finding of pebbles at even a greater elevation on the French-Adams Creek knob. While thus presenting the evidence of high water levels, I am far from convinced that this evidence points exclusively to river flows. Much more does it appear that, in one part of its history at least, we are dealing with the evidences of the past existence of large lakelike bodies of water, perhaps even of a vast inland sea. The contours of the country in a sort of ill-defined way suggest this interpretation—an interpretation that is not, however, without evidence to support it, and which seems also to have been entertained before me by McConnell and by Israel Russell. The latter investigator has, indeed, given the name of Lake Yukon to a former extensive body of water, of which the existing Lakes Lebarge, Marsh, Tagish, and Bennett, with the connecting Yukon, are only dissociated parts. This lake is assumed to have been about one hundred and fifty miles in length, with a surface elevated between twenty-five hundred and twenty-seven hundred feet above the sea.

First in the line of evidence may perhaps



be taken the universality of wash gravel and of terrace *débris* and the great heights which they occupy. While I have not myself observed such evidences of water action on the very summit of the Dome, there is reason to believe that they do or at least did exist. Most of this summit, in its narrowed form and rapidly descending slopes, has been, if one may use the expression, more than washed off, and could hardly be expected to retain for any great length of time accumulations of loose fragmental material. But at least its far-off continuation near the source (right fork) of Eldorado Creek bears some of it on its shoulder, and I have also seen it in an excavation on the loftily located Claim 71 of that stream. Nearly abreast of the international boundary, the one hundred and forty-first meridian of west longitude (Greenwich), McConnell and Russell noted the terrace line of the Yukon River as high up as seven hundred and thirty feet, which is still about four hundred feet below the point where I obtained wash gravel on the peak back of Dawson; but Dr. George Dawson found the terraces on Dease Lake to rise to thirty-six hundred and sixty feet, and elsewhere he calls attention to having come across water-rolled

gravel at an elevation of forty-three hundred feet, which would probably exceed by about six hundred feet the culminating point of Dome Mountain. Such high water could, with the existing configuration of the land surface, hardly define any other feature than that of a large interior sea or of a series of lake basins; and while it may be argued that there has been sufficient degradation of the land surface since the period of the height of water to permit us to reconstruct a contour that would be in harmony with altered and reduced river courses, and relieve us from the necessity of invoking the assistance of lacustrine bodies in a solution of the problem, it does not seem to me likely that this has been the case. The physiognomy of the upper Yukon valley supports this contention, and even to-day the river has not yet fully escaped from a lacustrine condition which is merely fragmental of a previous state.

On one point bearing upon the succession of events in the upper Yukon valley, and which has its connection with the history of the Klondike region, my conclusions differ somewhat from those that have been expressed by Dawson. This pertains to the deposit of volcanic



The Vale of Eldorado.



ash which is so marked a feature of the accumulations of the river's banks. For nearly three hundred miles by the course of the river a stratum of pumiceous ash, ordinarily not more than four or six inches in thickness, constitutes almost without break the top layer but one of the banks on either side, and that which is above it is generally only the insignificant soil or subsoil which immediately supports the vegetation. So persistent is this ash layer, and so uniformly does it hold to an even thickness and to its exact position beneath the surface, that without further examination one would be tempted to believe from a little distance that it was merely the ordinary subsoil layer from which the colour had been leached out by vegetable growths. Here and there, where there have been local disturbances or water washings have produced concentration, it may have acquired a development of a few feet, and occasionally it has accommodated itself to flexures or saggings of the deposits which it normally caps as a horizontal zone. Dr. Dawson, in commenting upon its occurrence, correctly assumes that it represents one continuous volcanic eruption, the date of which might fall well within a period of a few hundred years, and he speculates as to



its being possibly associated with an outbreak from Mount Wrangell or some active cone which is represented by the Indians to exist in the region of the upper White River. Beyond this, from the normality of its position, and the assumed fact that no fluvial or aqueous deposits have been found overlying it, the same observer argues that the outbreak must have taken place subsequent to the formation of the present river courses and their valleys, a conclusion in which I do not see my way to concur. The only satisfactory interpretation of this vast uniformly placed and uniformly layered deposit of ash is to me that which assumes a deposition in a widely extended lake basin, or in shallow lagoon waters which already in part occupied the present valley surfaces. In such waters precipitation from long-continued suspension would proceed gradually and evenly, to the end of shaping a deposit of nearly uniform development and of vast extent. Such depositions we find in the valleys lying north of the City of Mexico (Zumpango, Tequixquiac) and in the lacustrine area of Anahuac, also in the famous fossiliferous basin of Florissant, in Colorado. With the subsequent formation or reformation of the river's course we should have this de-

posit cut through, with the result of presenting the even layer which is so persistent in its following. This method would also account for the anomalous position in which we find the ash deposits; while still holding the same relation to the top surface, it occasionally rises far above what might be assumed to be its normal height or level above the water's surface—from four to ten feet—a condition that would hardly be in consonance with the assumption that the ash was deposited after the actual river channels had been cut. But other and more direct proof of aqueous occupation after the laying of the ash is had in the fact that in one place at least, and doubtless many more such will be found on closer investigation, lacustrine or fluviatile shells (subfossils) occur in the layer overlying the ash. A locality of this kind is found on the right bank not many miles above the Five Finger Rapids. Here, at a height of not more than four feet above the river, I had the pleasure of determining species of *Limnea* and *Physa*, associated singularly enough with *Helix*, in the layers immediately above and below the ash bed, and in both horizons the species were identical. This isolated fact speaks volumes for itself. Had this been the region of

Helena, Ark., I should have been prompted to class the bed with a portion of the Mississippi loess. What interested me further in this connection was the fact that up to this time I had failed to bring to light one solitary mollusc from the upper Yukon, and to all inquiries regarding the existence of shellfish in this northern water invariably a negative reply was received. Only on that day did I again obtain success in my malacological effort, the almost icy waters rewarding my search with a single specimen—unfortunately subsequently lost—of a *Bythinella*, or some closely related type, so that even to-day my knowledge does not permit me to state if the subfossil species of the banks have their living representatives, either specific or generic, in the almost wholly noncalcareous waters of the existing river. The question from more points than one is interesting, and deserves more than passing attention. It may be remarked in this place that the only other fluviatile invertebrate which I found in these waters was a white siliceous coating sponge, whose statoblasts were well visible to the naked eye. Unfortunately, the loss of my specimens has prevented determination, a circumstance the more to be deplored as these fresh-water sponges are

the most northern in habit known to the zoölogist.\*

There is evidence of another kind pointing to a comparative newness of much of the present course of the Yukon. The feature has been noticed alike by nongeographers and geographers, and by geologists as well, that the arm which carries the greatest volume of water does not everywhere occupy the main orographic valley. Thus, as Dawson has well pointed out, in coming up the stream the valley of the Big Salmon appears to be more nearly the continuation of the main valley below than that which still (and properly) continues to be designated the Lewes (Yukon) above; and this is still more markedly the case with the Hootalinqua (Teslin-too or Newberry River) at the confluence with the Thirty Mile. Even the valley of the Pelly at its junction with the Yukon, near Fort Selkirk, would perhaps to most persons suggest itself as the main channel of erosion. There is no hardship to geological facts in invoking the aid of great dis-

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\* Prof. Russell, in discussing the flood-plain deposits of the Yukon about the mouth of the Porcupine River, says that "fresh-water shells were frequently observed in the finer deposits." Unfortunately, no statement is made of the types which they represent.

placements to account for a condition which to my mind is well impressed upon the landscape; for, even without the proper or fully satisfactory evidence in hand to support the view, I fully believe that the greater part of the upper Yukon tract only recently emerged from a lacustrine condition. Nor is it to me by any means certain that this emergence or final reconstruction of the land surface into valley tracts need be more than a few hundred years old, or necessarily older than the deposition of the volcanic ash, which is hypothetically carried back by Dawson to a possible five hundred years or so. If it should be objected that we know of no such rapid change in the configuration of a land surface brought about by aqueous agencies, it might be answered that the mechanics of erosion in a pre-eminently drift-covered region, under subarctic conditions and with the influence of a most powerful and energetic stream near by, have neither been studied nor observed.

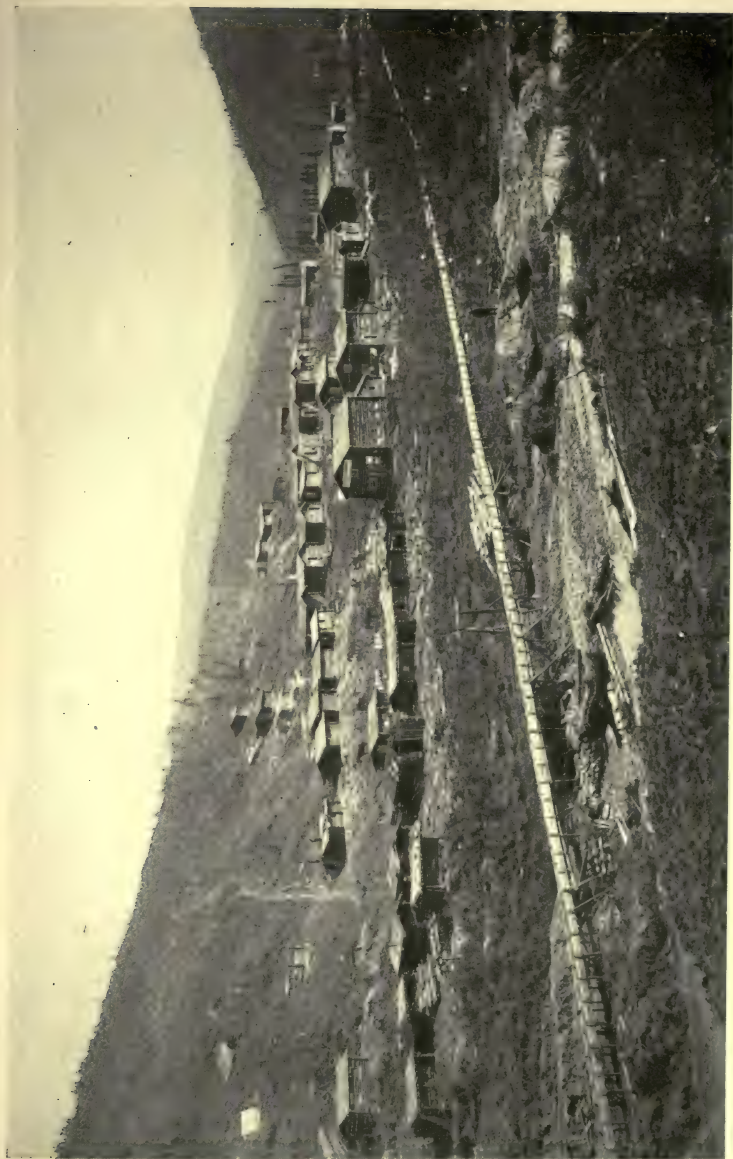
Let us examine the possibilities of the case. As an initiatory premise it might be assumed, without much chance of either affirmation or denial, that the degradation of the land surface in the immediate valleys of the main streams



is or has been in the past taking place at the rate of half a line per day; so far as the eye and ordinary instruments of measurement are concerned this is a quite inappreciable amount, and I see no reason why it may not be assumed as the working power of the Yukon. With this rate of erosion a valley trough or contour of about a foot and a third might be formed in the period of a single year, or of nearly seven hundred feet in five hundred years, and if we lessen the daily erosion to one quarter of the amount stated—i. e., to an eighth of a line—we should still have in this same period of five hundred years, speaking broadly, a trough of about one hundred and seventy-five feet depth, quite sufficient to have brought about most marked changes in the aspect of a drift-covered lagoon region, and perhaps ample to account for those physiognomic peculiarities which have been discovered. I am fully impressed with the magnitude of the distance which separates the amount of erosion which I have assumed—an eighth of a line daily—from the “one foot in six thousand years,” which has been preached categorically from lecturn and text-book for the better part of a quarter of a century and threatens to make dogma for still another pe-

riod of equal length; but the conditions here are entirely different from those of average continental denudation—in fact, have as nearly nothing in common as they can have. My observations in the tropics and subtropics have most impressively taught me the lesson of rapid changes, and with the conditions that are and have been associated with the Yukon, I am prepared for the lesson of equal change in the north. But, as a matter of fact, are we not taught of a removal in the west central United States of some twelve thousand feet of rock strata in a period not impossibly considerably less than two hundred thousand years? The one foot in sixteen years has here likewise nothing in common with the “prevailing” rate of continental destruction.

While stalled on a bar on the Yukon River, about two miles above Fort Selkirk, I was much impressed with the mechanical work of the stream. The gravel and pebbles were being hurried along rapidly under the lash of a five to six mile current, and their groans were audible frequently when they themselves were invisible. Every few minutes our steamer would swerve from her seemingly fixed position by the undercutting of the bar, and perhaps it



Grand Forks Village.—Valley of the Bonanza.



would be not far from the truth in saying that we should be to-day in very nearly the same position that we were in then had it not been for this undermining action of the stream. Let it be remembered that the Yukon has a current ranging up to seven miles, or to eight, as some of the navigators say, and that in certain months it is swiftly ice-bound, both on top and at the bottom, and heavily charged with boulders, and one may well realize the work of which it is capable. That with which I have debited it is purely hypothetical or conjectural, but it may serve a purpose in the elucidation of the main problem.

In its more distinctively geological relations the Klondike region may be broadly defined as one composed in the main of schists and schistose rocks, defining an area of considerable disturbance. Owing to the limited number of outcrops, by far the greater part of the surface being still buried beneath vegetation of one kind or another, the variety of rocks included within the region can best be told from an examination of creek boulders or the different dumps that mark hundreds of diggings and prospect holes along the various valleys and gulches. Some of this output, in which may be



found fragments of quartz and quartzitic schist, of mica, hornblende, and chloritic schists and slates, of granitic gneiss and gneissose granite, porphyry, diabase, diorite, and quartz (quartzite), is probably extra-territorial, having been washed in at a time when a more extensive foreign water had access to the region; but there is enough of outcrop to show that most, and perhaps all, of the types here indicated are really a part of the tract. The schists and schistose rocks, whose age from direct evidence in the field I was unable to determine, but which are almost certainly the equivalents in greater part of the Birch Creek series, as described by Spurr from the American side (Birch Creek and Forty Mile districts), constitute the kernel of the region. Observation is as yet too limited to permit of a positive classification of these schists according to their natural relations, and the reasons that have prompted some to consider them as being in part of pre-Paleozoic age are not quite clear to me, although they may easily be such. Of granite and true gneiss in position I saw practically nothing, and the limestones and marble were not sufficient in quantity to permit me to identify the heavy beds which are considered to be the distinguishing element of

the Forty Mile series. The beds where exposed show in most parts steep dips—in places standing almost vertically—but in how far these dips are uniform or the reverse, or in any way define a line of strike with anticlinals and synclinals, must be left for future close examination to ascertain.

Great lumps of white or pinkish quartz, some of them *in situ*, others washed or rolled down the open slopes, occur at many points of some of the mountain elevations, indicating the presence of dikes and gash veins, and in part of interstratified beds containing this material. I found much of it at several "horizons" of the slope back of French Hill, and also as a cap overlying the badly cleaved and fragmented schists of the summit (three thousand feet?) of the prominent knob which dominates this region. The same type of "kidney" quartz appears at repeated intervals on the slope leading up to the Dome, almost immediately after leaving the junction of Carmack's Fork with the Bonanza, and also on the saddle ridge which might properly be considered to be a part of the summit of Dome Mountain. Prospectors have in nearly all cases staked these assumed outcrops of quartz, recognising them as ledges,

and in a number of them have claimed the discovery of the "mother lode." So far as visible gold is concerned, I have in nearly all cases found them to be absolutely barren, and I do not think at this time that there is much chance of finding anything materially valuable in them, although events might prove the reverse. Most of the quartz that has so far been discovered in direct association with the gold—that is to say, wrapped up with or within itself, as in the case of the quartz-gold nuggets of French Hill—is of a gray-blue or pinkish tint and of a granular and nonspathic type, therefore differing materially in aspect and structure from the quartz of the hillsides and from the greater number of the quartz boulders that are contained in the dumps or have been removed from bed rock. Some of the boulders or rolled pebbles containing coarse gold are of the same character of quartz as the quartz of the hillsides. Notably one such was shown to me as coming from a high-bench claim (Millett's) on Adams Hill (left "limit" (bank) of Bonanza, between Little Skookum and Adams Creek), and other similar fragments taken from the rock *in situ* were observed on Gay Gulch and the ridge which separates the head waters of this stream from

those of Eldorado. In a dump at the mouth of Gay Gulch (a right-hand tributary of Eldorado abreast of Claim 37) I found fragments of rotted quartz which were well sprinkled with fine gold.

Spurr mentions the occurrence of graphitic shales at various points on the American side. Such are also to be seen at spots on the right bank of the Bonanza, if memory serves me right, between the "seventies" and "eighties," and I noted quite an extensive output of this material on creek Claim 14 on Adams Creek, taken out from a depth of sixteen or twenty feet. In the last-named locality it overlies a deposit—"pay dirt" it might be called, although I suspect that it is still pretty far above bed rock—from which nuggets of a value of from two to four dollars have been obtained. Of the relations of these graphitic slates I can not speak with any amount of certainty.

It is needless to disguise the fact that the problem of the origin and location of the gold in the Klondike region is to me still largely a sealed one. Every one of the theories that might be brought forward in explanation of the phenomenon—and there could be several such, backed by about an equal amount of support—would

easily have their weak points, and so long as this is the case would I prefer to consider the question an open one, awaiting its solution when more data, not only geological, but specific as to the quantity, quality, and exact location of the gold that is taken out from the different streams, will have been obtained than now exists. Professor Spurr's contention, based on observations made on the American side, that the intimate association of the placers (in the conforming character of their wash gravel and the fragmented, so-called, bed rock), with the basin rocks that immediately contain them, argues strongly in favour of a near-by origin or source—a source that is directly the rock masses into which the different valleys and gulches have been cut—probably receives about as much support from the Klondike region as it does from the side of the American gold fields. The conditions are seemingly the same or representative. The prime objection that might be put forward to this view, and it can not easily be brushed aside by a statement of "theoretical fallacies" or by the belief that future examinations will reveal contrary conditions, or again that in other regions of the earth's surface a similar proposition is presented—a method of



arriving at a conclusion which is unfortunately only too common with scientists, not less than with laymen—is the fact that only a fractional quantity of gold has as yet been found directly in the rocks that bound the placers, or in the veins or dikes that penetrate them. Good search has been made for this association, but thus far almost entirely without result, despite announcements that have from time to time been made regarding the finding of “mother lodes” assaying from one hundred to two hundred thousand dollars to the ton. I have examined most of these breeding places of coarse gold, and about the only evidence that I could determine for them of an auriferous character was contained in the inscriptions or stake-posts that marked prospective wealths to certain individuals.

Again, it does not by any means appear so conclusive to me as seemingly it does to Professor Spurr that because in some gulches the gold heads up in increasing quantities the nearer we approach the beginnings (heads) of these gulches, and that with this approach the coarseness of the grains and nuggets likewise increases, we are necessarily forced to assume that the travel of the gold at large has been confined

within the boundaries of the gulches in which it is at present contained, or that its source is to be sought near by. A number of the most "solid" streams of the Klondike region, such as the Bonanza and Eldorado, if we are permitted to judge from the evidence of outputs and of prospects up to the present time, hardly sustain the conditions of the American creeks. The richest claims on the Eldorado are, starting from its mouth—the junction with the Bonanza—4, 5, 12, 13, 29, 30, 31, 36, with other claims abundantly rich between these. Number 30 is, I believe, generally considered to be the banner claim, and it is situated about three miles up—far enough, perhaps, to sustain in a superficial way Professor Spurr's generalization as to location—and above it 36 is not unlikely to show up as well as any of the other creek claims below. But the valley of Eldorado, whether constricted or open, continues for miles beyond either of its two head forks—that which is known as Eldorado proper, and the one, Chief or Chief Isaac Gulch, which is geographically the continuation. So little has been found above 36 or 37 that the stream in that part is ordinarily spoken of as being barren. Again, so far as the tributaries on either side of Eldorado are

concerned, and the possibility that they are responsible for the gold that is contained in the main stream between 37 and 1 rather than the Eldorado itself—a condition in no way impossible or improbable—it can only be said for them that up to this time they have, with the possible exception of Oro Grande (tributary to Eldorado abreast of Claim 31), yielded very little gold themselves, and have hardly given indication of containing much of a supply. I have used the words “up to this time” advisedly, because I am aware upon how little the evil reputation of a gulch rests, and how prospectors deceive themselves by the character of their defective prospect holes. Hence, while my argument is drawn from existing evidence, it can not be assumed that this evidence is by any means sufficient to warrant a conclusion. It is by no means unlikely that some of the lateral gulches will really be found to be largely gold bearing, and of such Gay Gulch and the left-fork ascending of Eldorado (Eldorado proper above 47) appear to me the most promising.

The condition of the Bonanza is very similar to that of the Eldorado. Its greatest wealth, as so far determined, is concentrated in its mid-

dle course, beginning about five miles above its mouth and terminating some six miles below its source. But very little gold, if the information given to me is correct, has been taken out from or determined to exist in the tract lying above Claim 42 above Discovery, or the mouth of Victoria Gulch (left-hand tributary, whose source is found on a ridge from the opposite side of which Gay Gulch descends to the Eldorado), and yet the valley continues open and without material change for at least two miles, and with a certain contraction for four miles more. Barring the Eldorado and the streams coming in from the same side nearest to it—Big Skookum, Little Skookum, and Adams—few if any of the side gulches of the Bonanza are known to be really rich in gold, and for the moment, at least, they can hardly be looked upon as having furnished the main supply to the main stream. What, then, becomes of the character of the upper Bonanza? If a receiving and distributing source, what has become of its own material?

The discoveries that have latterly been made on the high-level benches and hillsides give, it seems to me, a possible clew to the interpretation of some of the phenomena at least. The

richest of the benches that have thus far been worked are those of the almost continuous line of deposits which, at an elevation of eighty to one hundred and twenty feet above the basal streams, extend (on the left limit) from about Claim 17 on Eldorado to Claim 15 below on Bonanza, or even beyond, and constitute what are locally known as French, Gold, Skookum, and Adams hills. I have already referred to these as constituting a downwash in principal part from an interior mountain mass, and if this interpretation is a correct one, then they constitute a sort of "blanket deposit," with a reserve of gold even considerably to the interior of the crest of the hills which is now being worked, rather than a narrow stream flow. Most of the miners, and perhaps others who are best placed from their work to know the conditions, and among these may be included some of the Dominion surveyors, will differ from me in this view, and indeed they profess to be able to trace continuous "pay streaks"; but, with proper deference to their views and the explanations they have offered to me, I am still forced to believe that the evidence is against them. And the judgment of at least two of the largest claim holders, Mr. Staley



of "Discovery Claim" on French Hill, and Mr. Millett on Adams Hill, is in accord with my own views. It is from these high deposits, and from others like them holding similar relations elsewhere, that I believe much of the gold in the creek claims has been obtained; in other words, the secondary main source of the metal is to be found in the high levels, from which, by a long process of direct and indirect denudation—head washings, the washings of tributary streams, landslides, etc.—the basal levels have accumulated their present wealth. That such a contribution from above downward in the middle course of a stream is and has been taking place is abundantly obvious; and it is not less plain to those who, by position, have reaped a rich harvest in the accumulation of hillside material in the creek locations. The excessively rich claims of the Bonanza opposite the Skookum hills are testimony sufficient in this direction; and so is it in the case of the bench claims of the first tier of Eldorado (left limit) opposite creek claims 15 and 16. The assumption of this lateral downwash or unloading from the side hills will also tend to explain the so-called "spotted condition" of the creek claims, a term in use

by prospectors to designate the character of a creek bed which shows gold only in intervals or spots. I am not yet fully convinced as to the reality of such a condition, but that certain spots or areas are much more rich than others there can be no question; and it is this condition that would be best explained by the view that has just been set forth.

Professor Spurr has cited the condition of angularity of the gold flakes or particles as evidence in support of his view that the gold could not have travelled far and must necessarily be of local origin. This method of attacking the problem is a very tempting one and one that can not fail to appeal to those who are wedded to the theory of the secondary or derivatory origin of placer gold by the breadth of testimony that it carries. Whether most of the gold "dust" is of the angular or noneroded type or not matters little, for it is certain that much of it has this character, and perhaps equally so on all the creeks. It is less certain, however, what this condition implies, and I think it may be open to legitimate doubt whether it is evidence in support of nontravel; for, apart from other evidence, it can readily be contended that at least a large quantity of

gold has been brought to the region in quartz or some other parent rock, which only on final disintegration had yielded up its gold dust in the condition—angular, if we may so choose to assume—in which it was held by the rock; and it is suggestively true that small fragments or blocks of quartz, found especially in the region of and about French Hill, do frequently contain just such parts of distinctively sharp and angular gold. But in whichever way this evidence might be interpreted, that obtained from the “rolled” nuggets can hardly be in harmony with it. If as really rolled specimens—a condition which some will venture to doubt—they teach anything at all, it is the lesson of wear brought about by continuous erosion, of travel, but from how far we are not yet in a position to state. The quantity of so-called rolled nuggets is surprisingly large, and there is hardly a claim that does not contain more or less of them. Some are roughly round, showing projecting knobs and protuberances, others are as smooth and evenly planed off as though they had been passed through a rasping machine. Much of the Skookum Hill gold has this character, discoid nuggets being abundant; but I have seen nothing from the Klondike tract which

is so emphatically "pressed" out as the oval nummiform nuggets obtained (and I am told "distinctively") from Napoleon Creek, in American territory. The largest nugget which was brought to my attention came from McDonald's Claim 36 on Eldorado, and was valued at somewhat more than four hundred dollars (twenty-six ounces); a somewhat larger one, it is claimed, was obtained from a bench claim near by. The first mentioned one was cylindrically rounded, somewhat reniform in shape. Largest after this of the specimens seen by me were the flat pieces, somewhat smaller than the palm of the hand and estimated to have values respectively of \$180 and \$214, which were obtained in the Burke claim on French Hill, on the first tier above "Discovery."

The fully rounded character of so many of the nuggets, while it may argue for travel, need not indicate that this travel was necessarily an extensive one. As every one knows from the condition of stream boulders in a mountain region, the character of roundness which distinguishes them may be, and frequently is, acquired in a travel of only a few miles, and the distance of work may be much less than this. Masses of gold, in a rapidly working stream,

should perhaps be rounded off in a still shorter area of erosion, its softness conducing materially to this end. Unfortunately, fixed data on these points are still to be sought after, and until they are at hand the question of travel, whether from near or from afar, must be considered an open one.

The feeling has not escaped some who have given much attention to the character of the nuggets that in many instances they bear the impress of having undergone hard pressure. The perfectly flattened-out types of specimens, such as have been mentioned as coming from Napoleon Creek, and others of a somewhat like nature from the middle Koyukuk, convey this impression most temptingly, as do likewise other nuggets very abundantly found, of which granular or saccharoid quartz constitutes a most integral part. In these the gold appears to be wrapped around the quartz particles in a way superficially suggesting that the whole had been pressed together; or, to use the more explicit language of the miner, the gold had been forced into the quartz and now holds it. It is a common saying with prospectors that it is not a case of quartz containing gold, but of gold containing quartz. For the moment I prefer not



to express an opinion on the formation or character of such composite nuggets, nor upon the easy possibility of an accretion in size of nuggets through the cold pressure of particles upon one another. That this last condition can obtain at times I have convinced myself, for I have seen nuggets so constructed through the agency of artificial pressure.

In the preceding discussion the argument has been advanced almost entirely from the standpoint of those who assume that the gold of placer deposits is derived directly from the breaking down or disintegration of near-by (or not very distant) reef deposits, a view which is seemingly held by the vast majority of geologists and perhaps even mining experts. At the risk of being included among those of a community who, as so graphically stated by the late Prof. J. S. Newberry,\* "have a proclivity (we are, perhaps, justified in calling it a perversity) that leads them to choose instinctively the opposite of the generally accepted view, or to reject a simple and easy solution of a problem in favour of an intricate and difficult one," I

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\* The Genesis and Distribution of Gold.—School of Mines Quarterly, November, 1881.

venture to doubt the accuracy of this generally accepted view of the genesis of placer gold; and it is but fair to myself to state that this doubt has been mainly born of my examination of the Klondike gold fields and the adjoining region. The solution of the problem does not appear to me so simple and easy as some would like to have it be.

So far back as 1859 the late Prof. F. A. Genth\* had already expressed himself decidedly on this point: "All these facts prove that the gold is carried into the veins from the adjoining rocks, and that the opinion which considers veins the source of the gold of alluvial and diluvial deposits and the soil is erroneous." Others after him have held, and some still hold to-day, the same negative view; and of those most emphatic in avowing their disbelief is J. C. F. Johnson, a geologist of long experience among the gold mines of Australia, who, in a recent publication, "Getting Gold" (London, 1897), briefly reviews the subject from the aspects of both theory and laboratory practise. His contention is that placer gold may readily be "nascent in its alluvial bed"

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\* American Journal of Science, second series, xxviii, p. 255.

(p. 55)—that is, made as a precipitate from waters holding gold in one or other of its salts in solution—and, conversely, that it could not, especially in the form of the larger nuggets, be a mechanical derivative from the differing gold of gold reefs, lodes, dikes, or veins. His views and method of inquiry are in the main those of Prof. T. Egleston, as stated by that investigator in his well-known paper, published in the Transactions of the American Institute of Mining Engineers for 1881, entitled "The Formation of Gold Nuggets and Placer Deposits." It is not necessary in this place to recite the facts and arguments used by these observers in support of their conclusions, nor to refer specifically to the works of others in the same field. The general facts that have been advanced in support of the theory of precipitation from chemical solution are succinctly stated by Professor Newberry in his paper already referred to, and broadly cover the ground. They are: (1) the rarity of nuggets or gold masses of any considerable size in quartz veins; (2) the greater purity of the fine gold of placers than that of the neighbouring veins; (3) the frosted character of the surface of some gold nuggets; (4) instances of deposition of gold in organic

substances buried in the gold placers; and (5) the solubility of gold as proved by laboratory experiments. These facts are accepted, although with differing interpretations, by the advocates of both the theories that have been advanced, and only as regards the first one is there some divergence of opinion. Thus, while the surprisingly large size of certain nuggets is recognised, and it is admitted that no masses of reef gold equalling the largest have ever been noted, yet it is contended by the advocates of the orthodox view that this is not properly an objection to their theory, since some really very large pieces of gold in place have been found—as, for example, the chunk weighing ninety-five pounds and a half which was recorded by Raymond from the Monumental Mine of the Sierra Buttes, California. This is just one half the size of the famous “Welcome Stranger” from the Victorian fields of Australia, found among the roots of a tree at Donnolly in 1869, and but little more than half the weight of the more generally known “Welcome Nugget,” weighing one hundred and eighty-four pounds, from Bakery Hill, Ballarat. It is, however, contended, and with a certain plausibility, that if masses of the weight of ninety-five pounds have

already been found, there is reason to believe that others of very much larger size will be discovered in the future, and surely no geologist is in a position to say that they will not. Newberry has also well emphasized the condition that but little penetration has yet been made into the depths of the auriferous quartz lodes, whereas nature has most extensively opened the alluvial deposits and laid them free to a most liberal examination; therefore, the future discovery is by no means indicated in the discoveries that have already been made.

This argument does not, to me, satisfactorily dispose of the nugget question, for while I freely admit not only the possibility but the strong probability that very large masses of reef gold will be found in the future, the fact yet remains that there are a surprisingly large number of massive or moderately weighty nuggets, and an opposingly very small number of large pieces of gold that are not in the form of nuggets; and further, the former are not localized, but have been produced by most of the extensive placer deposits of the globe.

Thus, we have from Australia, in addition to the two that have already been mentioned, besides others large but of less note, the im-



pure Braidwood specimen, weighing three hundred and fifty pounds, two thirds gold; the Merroo Creek nugget (found in 1851), from New South Wales, weighing one hundred and six pounds; and the Burrandong nugget (found in 1858), also from New South Wales, weighing one hundred and seven pounds.\* The largest lump of gold found in the United States, after the one from the Sierra Buttes, to which reference has already been made, was obtained at about the beginning of the present century from the Reed plantation, in Cabarras County, North Carolina, the specimen as reported weighing twenty-eight pounds; another from the same plantation it is claimed weighed seventeen pounds.†

It is not necessary to refer in this place to the number of nuggets weighing from five to thirty or fifty pounds. If the mechanical origin of these loose masses of gold is not accepted, it would seem that for the moment we are forced to admit the alternative proposition of construction from chemical solution (precipitation).

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\* Liversidge, Minerals of New South Wales, 1876. The "Blanche Barkly" (1857) weighed one hundred and forty-five pounds; the great nameless of Ballarat, one hundred and thirty-four pounds.

† W. S. Yeates, Gold Deposits of Georgia, 1896-'98, p. 29.

The difficulties that lie in the way of this theory, even with the acceptance of the facts which now fully demonstrate the solubility of gold and its fairly ready precipitation through the action of organic substances and by contact with segregating nuclei, must appeal to every geologist; for whether gold dust, gold flakes, or nuggets are considered, the quantity contained in the placers is such as to necessitate the assumption of a solution surcharged with gold to an extent that but few investigators will freely consider reasonable. It must be admitted, however, that on this point our knowledge is practically *nil*, and we can hardly state for it more than we can for the quantity of iron that is held in solution to form the masses that develop as iron pyrites. The fact that roots of plants and timber (as in the deep leads of Ballarat) at various times and places have been found impregnated with gold, and that a mammoth tusk, as I am credibly informed, has been obtained from the Klondike fields similarly impregnated, besides other evidence like in kind, must be taken to mean that gold is present in solution in the placer-making waters, but in what quantity remains to be determined.

In this connection it may be well to cite the opinion of Professor Cosmo Newbery, of the Victorian gold fields, based upon his researches upon the reaction of iron sulphides upon a solution of gold, as to the effect that the presence of iron pyrites may have upon the formation of nuggets (by deposition and aggregation): "As to the size of a pyritous mass necessary to produce in this manner a large nugget, it is by no means considerable. A mass of common pyrites (bisulphide of iron) weighing only twelve pounds is competent for the construction of the famous 'Welcome Nugget,' an Australian find having weight equal to one hundred and fifty-two pounds avoirdupois. Such masses of pyrites are by no means uncommon in our drifts or the beds of our mountain streams." Professor Genth had already noticed the peculiar association of gold with pyrites, and to its precipitation in auriferous deposits by the sulphate of iron "previous to its own reduction into pyrites." Professor Kemp also concedes the circulation in solution of the precious metal through the formed gravels, for he states: "Gold has also been found by assay in pyrite that has been formed in the gravels since their deposition, and from this it is evident that

the precious metal does circulate in solution with sulphate of iron, but on this slender foundation some quite unwarranted chemical hypotheses for the origin of nuggets have been based." \*

The association of gold with pyrites, and the action of this mineral in producing a precipitate of gold from a magma holding this metal in solution, has been forcibly dwelt upon by Johanson, Molengraaf, Koch, Schmeisser, and others, in their investigations of the auriferous deposits of Beresowsk, the Witwatersrand and elsewhere; and the subject is reviewed at length and with positive conclusions by Von Kraatz, in the *Zeitschrift für praktische Geologie*, May, 1896. The conclusions of these investigators leave little doubt that gold, in greater or less quantity, may be and is being formed or deposited as a secondary product. I do not believe the quantity of iron pyrites that has been found in association with the gold in the Klondike placers is such as to permit us to recognise it as a main agent in producing precipitation; but it is only one of a number of agents or bodies, as we now know them, which may produce the same result. The

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\* Ore Deposits of the United States, 1893, p. 247.

free association here, as elsewhere, of magnetic sand with the gold is a significant circumstance.

Without wishing to express a positive opinion on the chemical relations of placer gold, either to affirm that much of it has been deposited from an auric solution or to deny that such may have been the case, it remains in this place only to inquire to what extent the conditions of the Klondike region support or oppose the facts which have been assumed to favour the disintegration theory (and, conversely, disprove the theory of chemical deposition). These are again perhaps best summarized by Professor Newberry, and are briefly as follows:

1. Deposits of placer gold are always found adjacent to and lying below districts traversed by auriferous veins and nowhere else.

Our present knowledge of the Klondike region, or of the almost contiguous gold region on the American side, hardly satisfies this condition. True gold veins are so little in evidence, or are so poor in metallic material where found or reported to have been found, that they can not properly be considered in this connection. Naturally, with further search in a still largely wooded region it is not unlikely that they may be proved to exist.



2. The association of placer gold with rolled fragments of quartz and the finding of the metal in the irregularities of the bed rock, over which a washing process on a large scale has been in action—a condition proving “the accumulations of gold to be mechanical rather than chemical.”

These conditions are existent in the Klondike region, but it can hardly be assumed that the rolled fragments of quartz argue for more than travel and abrasion of the quartz. So far as the sifting out of the gold toward bed rock is concerned, I suspect that the arguments advanced by Professor Egleston through this circumstance *against* mechanical distribution are more valid than those that are commonly brought forward in support of it. The heavy masses of gold must certainly tend to wear their way through the accumulations of sand, clay, and gravel toward bed rock, but that they should do so, so generally and to such broad exclusion from the upper layers, is in my mind a suspicious circumstance. If placer deposits are so readily upturned and reworked with bodily movement of gold as the mechanical displacement theory calls for, then, it seems to me, there ought to be a much more indiscriminate com-

mingling of gold above bed rock than is found to be the case in most places. On the other hand, if it is assumed that in the reworking of the placers the gold has been moved by its own high specific gravity mainly in the direction downward, then much of the evidence that is borrowed from the assumed "rolling" and abrasion of nuggets is rendered negative.

3. The distribution of gold in the manner that the nuggets and coarse gold are found nearest the outcrops of the quartz veins that have supplied them, while the particles become gradually finer and finer "as the line of drainage is followed from this point."

This condition has hardly been demonstrated to exist in any of the fields that have thus far been worked in the Klondike region, although Professor Spurr appears to recognise it in the placers of the Alaskan side.

4. The general interassociation of pebbles and gold-bearing quartz, evidently derived from the neighbouring veins, and the fact that "most of the nuggets have more or less quartz, just like that of the veins, still adhering to them."

The close admixture of quartz and gold as the "make-up" of a large number of the Klondike nuggets is unmistakable; on the other

hand, it is recognised by most miners and prospectors that the quartz of the nuggets is neither in colour nor in general aspect that of the quartz "leads," veins, or dikes which have thus far been prospected, or which appear on the surface. Most of these have thus far proved absolutely barren, and, while almost the only gangue that is visible, they may ultimately prove not to be the true mineral veins of the region. This subject has already been discussed.

5. The evidence of "rolled," "rounded," and "battered" surfaces of the nuggets, as well as of the general pebblelike and scaly aspect of the gold particles, proving a condition brought about by blows and friction and of transportation by mechanical means.

I confess that the evidence from this side is less satisfactory than from any other, and it is really that which almost staggers one's belief in the generally accepted theory. Doubtless, some or even many of the rounded nuggets have had their distinctive forms impressed upon them by mechanical wear and collision, but few that have come to my notice clearly betray such marks of hard rubbing. Some of the largest are distinctly mammillated or reniform; others, locally restricted to certain creeks

or gulches and easily recognised for their habitats, are flattened out as evenly as lozenges (Napoleon Creek, Koyukuk, on the American side). The great mass of the dust is in the form of flattened scales, which, for a material as soft as gold, does not seem to me the condition in which moved material would appear; and it should be noted that the larger number of these flattened scales have sharp, not abraded, edges. Again, much of the gold is sharply angular, wholly unlike what one would expect to find in repeatedly disturbed deposits. That true "float" quartz containing gold is found in some of the claims is known to all prospectors. One of the finest of such specimens was shown to me by Mr. Millet, coming from his bench claim on Little Skookum, Adams Hill, and it contained numerous pieces of very coarse gold embedded in its mass; the surfaces of these showed unmistakable evidence of abrasion, and in a way very different from that exhibited by the surfaces of the nuggets generally.

Of course it can be argued that the flattened form of so much of the gold dust, of the dust scales, and of many of the nuggets has been induced by the constant strain of pressure from above, a condition analogous to that which has

been imposed upon the particles producing cleavage in certain shaly rocks; on the other hand, this form would seem to better satisfy the conditions resulting from chemical deposition, and to repeat a form which is frequently recognised in certain iron precipitates.\*

6. Professor Newberry contends that if the gold of placers was deposited from solution we should necessarily find much of it crystallized and forming strings and sheets running through the porous material.

I am not aware that such crystallized particles are sufficiently numerous in the Klondike gold to merit particular consideration. It is certain, however, that a very large number of the smaller composite nuggets, by which I mean those in which quartz enters as a most marked constituent, have this quartz in oppressed grains

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\* The difficulty of moving, even by torrential waters, of large lumps of nugget gold is freely recognized even by those geologists who uphold the view of mechanical transport; and the difficulty, it must be confessed, is a rather serious one, and one which some have attempted to meet by the assumption that the more weighty nuggets had at the time of their transport been imbedded in large masses of "mother rock"—quartz—and were not then so oppressive by their high specific gravity. To what extent the actual facts may be ultimately found to support this contention remains for future investigation to determine, but at this time they can not be said to sustain it.



or granules, between which sheet or stringer gold is singularly interwoven.

The condition is one which I do not fully understand, and therefore leave to consideration after further study. But if it is a condition necessary, as Professor Newberry seems to imply, that strings, sheets, and crystals should occur in chemically deposited gold, is it not equally necessary that such forms should also be a constituent of gold mechanically deposited? Can it for one moment be assumed that all the various forms of the metal occurring primarily in veins, dikes, etc., have been rounded off into boulders or powdered up into grains and "colours"? Is there to be none of it left in its normal form, and is there no recently extracted gold to be found anywhere? This negative condition is to me much more serious for the mechanical argument than for the chemical.

After thus considering some of the difficulties that lie in the way of both theories of the origin and formation of alluvial gold, I confess to the still greater difficulty of accepting either the one or the other. Before my journey to the Klondike a question of doubt as to the orthodox view had hardly entered my mind; now, it must be admitted, this doubt is strong-

ly emphasized. Whether the facts that I have observed warrant this change of view ought, perhaps, to be left for others to determine, and surely many new facts will be brought to light by future investigators of the interesting Northwest; but for the present the argument from the Klondike seems to largely favour the position of those who hold to chemical deposition.

One further condition might be referred to here as bearing upon the question of chemical solution and precipitation—namely, the condition of the waters in which the required changes may have taken place. On entirely independent evidence I have already given my reasons for assuming that up to a very recent time the greater part of the upper Yukon region was in the condition of a vast sea or series of large lagoons, from which a steady off-drainage has gradually or even rapidly brought about the present land system. Volcanic manifestations were frequent and pronounced in the region, and there can be little or no question that much of the standing and running waters were chemically and physically surcharged and converted into active agents of chemical destruction and construction. Theoretically, at least, they may be considered to have been in a fit condition

to produce those effects which the theory of chemical deposition requires. To what extent these waters may have been assisted in their work by organic reactions it is at this time impossible to say; but if any distinctive value is to be attached to the finding of gold flakes and nuggets among roots and grass, as has several times been noted in Australia and elsewhere, and from which the inference has been drawn that these substances have been active in reducing the gold from its condition of assumed solution, then it may be well to note that a not inconsiderable amount of gold is disseminated through, and being picked out from, the grass and roots of the surface of the newly discovered Atlin gold fields, in a portion of the upper Yukon region of British Columbia.

Further on (p. 276) I call attention to the dioritic and other volcanic masses that invade the Klondike gold region. Much the same form of volcanic intrusion has been noted in the gold regions of the Ural, in the Swifts Creek and Coolgardie districts of Australia, in Hungary, in Chili, etc., and there can be little doubt, as Howitt, Futterer, Kraatz and others have contended, that the volcanic phenomena attending or causing the intrusion were largely re-

sponsible for the making of the gold; for the gold is in too close association with the diorite to be considered otherwise than as a "dioritized" product. It may be assumed with these investigators that it was brought up from the earth's interior hydro-thermally, and then precipitated as a secondary product in gangues, reefs, or lodes; but if this was possible, there seem to be no good reasons for assuming that it might not just as well have been deposited irregularly over "nucleating" or precipitating surfaces of a free basin of chemically charged waters—waters already holding gold in solution, or to which it was brought through the instrumentality of volcanic action.

As regards the period of time during which the gold was brought to and accumulated in the existing placers of the Klondike region little can be said definitely, but it seems to me quite safe to assume that this period was geologically a very recent one—one not necessarily extending back further than a few hundred or thousand years. With little hesitation the deposits may be classed as Post-Pliocene, and with a decided leaning to that part which in a vague way geologists designate as "recent." But this assumption of age must not necessarily be made

part of the history of the original deposits or placers from which the present creek claims may have been developed; these are necessarily older, but how much older, whether much or little, the evidence in hand does not as yet permit us to state. As factors involved in the determination of the age of the worked placers are the bones of various animals which are entombed in the loose materials or matrix of the bed rock. Most prominent among such are the teeth and tusks of the mammoth, fine specimens of which have been obtained from different claims on Bonanza, Eldorado, Sulphur, and Dominion Creeks, and doubtless elsewhere. I have seen a number of such parts. A tusk that at the time of my visit was exhibited on Claim 2 below Discovery on Bonanza, but coming from a claim among the "thirties," I believe, of Eldorado, measured along the curve eight feet and a half. I also saw two skulls of a buffalo (*Bison latifrons*?) being dragged over the trail; and, if information is correct, in one of the log cabins on Bonanza Creek opposite to the mouth of Adams there is housed quite a collection of the *reliquiæ diluvianæ*. Many of these remains are said to come from bed rock—i. e., from the bottoms of the placers, and I should have liked



to be in a position to verify the statement that one of the Dominion tusks was fairly well impregnated with gold dust.

Agreeing with the conclusions of Dawson and McConnell, I could find no unequivocal evidences of glacial action in the Klondike region. The configuration of the country, whether of the mountain tops or of the valleys, is non-glacial.

There are no great expanses of uncovered country showing ice wear, no flutings or striations, nothing that ought reasonably to be interpreted as moraines. There are cobble accumulations, it is true, but these can be with more propriety attributed to simple water action than to the work of flowing ice, even if in a way they exhibit morainic characteristics. The marks of glacial action, unmistakable in every form, are so prominently impressed upon the landscape where the continental ice-sheet did in fact exist—as along the upper Yukon and the region of Bennett and the passes—that the contrasting appearance of the two regions must be apparent to every one who desires to see even with only half an eye. The greater number of the prospectors and miners, however, seem loath to give up the “glacial theory” to account for

the occurrence of the gold fields. My own fleeting observations fix the northern limit of glacial work at approximately the same point which has been determined upon by Dawson and McConnell—that of the Rink Rapids, one hundred and fifty miles in a direct line southeast of Dawson. What was involved in the sudden discharge of water northward from the melting of the ice-sheet and to what extent this water may have modified the face of the country, or even helped to the formation of placers, must be left in the nature of a conjecture until further data shall have been obtained, but certainly something happened.

It is hardly necessary in this place to refer to those local deposits of ice which prospectors call “glaciers,” and which are in most cases only an overaccumulation of ice formed from seepage waters and now occupy positions at varying depths beneath the surface. These are of course largely charged with gravel, dirt, and sand, and they form merely a part of the frozen soil. There are, however, other bodies of sub-surface ice, even of considerable thickness and almost entirely free of detrital material, the occurrence or manner of formation of which it is less easy to explain. In some cases they are

manifestly only back flows of inundating or dammed waters, which after freezing receive over their surface the downwash of other streams or of the adjoining hillsides. I have in a limited number of cases seen such deposits of almost pure ice, with a thickness of two or three feet, or even more.\*

If the evidences of glacial action appear to be entirely wanting in the region under consideration, those touching the phenomena of vulcanism are more decidedly in evidence—indeed, to the extent that I suspect that some of the local gold occurrences are directly a consequence of the operations which associate themselves with volcanic action. However recent may or may not be the basaltic (dioritic) outflows of Miles Cañon and the Upper Ramparts (at the confluence of the Pelly with the Yukon), or the rearing up of the knob which looks down upon Dawson, it is certain that some of the outbursts in the upper Yukon region could hardly be much older than modern; at

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\* Since writing the above, Mr. Tyrrell, at the annual meeting of the Geological Society of America, has called attention to glacial striæ occurring in Skookum Gulch; these he attributes to a local ice-sheet, having no connection with the main flow of the continental sheet of the glacial period.

least, such is the evidence that is conveyed by the large numbers of still freshly preserved vesicular boulders and scoriæ which have found their way into or about the channel of the stream. The occurrences along the upper waters of the White River are traditionally, at least, modern, and we have eruptions to-day in the region of Cook Inlet. Reports that still lack a certain amount of necessary confirmation also indicate the presence of one or more active cones in close proximity to the Atlin lake region.

Evidences of vulcanicity are here and there also to be met with in the very heart of the Klondike gold region, both in the form of rolled scoriæ and in dioritic dike masses. Such a one (dike) I located on Claims 12 and 13 of Eldorado. In the former claim (of Langlow) more particularly, where it forms a western wall to the line of excavation which has been opened, does it show up in good evidence. My attention was directed to it by the quantity of dioritic material, some of it in columnar or semi-columnar form, which appeared on the dumps. Those working on the claim had noticed the change in the character of their "bed rock," but they did not appreciate its significance. I also observed dioritic material in some of the

dumps farther up the valley, and have no doubt that occurrences such as that on Claim 12 will be found much more plentifully than they are now thought to exist, and the problem will then be ready for discussion: What is the relation existing between the dioritic outflows and the making or association of gold? Were it not for the excavation which revealed its presence, few would have surmised the possibility of the existence of the dike on Claim 12, so completely had all the traces of disturbance been levelled down and removed in the process of the final shaping of the land surface. This it is that can lead one to assume that the condition of Claim 12 might readily be repeated elsewhere, not only on Eldorado but on other creeks as well; and yet, so far as surface indications would point, one could for a long time be in ignorance of their occurrence.

Thus do the difficulties of geological investigation in the region under consideration prevent us at the moment from arriving at those definite conclusions which are the aim and purpose of science; but it is probably for the moment only, and the new research can not fail to throw much important light on all that pertains to the origin and method of distribution



of the gold in one of the most interesting and remote regions of the earth's surface.

The broad conclusions which my own observations and studies permit me at this time to hold may be summarized as follows:

1. The gold wealth of the Klondike region well sustain the claims that were put forth for it by the earlier prospectors. The concentration of gold in certain favoured spots is such as to almost bear out the characterization of miners that it "plasters the bottom."

2. Many more streams than are now known to be auriferous will be discovered to be gold bearing, and this applies equally to such as are still entirely unprospected and to others which have been declared barren through insufficient or deficient prospecting.

2. The gold region is one of highly disturbed schists and schistose rocks of ancient age, the contours of which indicate long continued degradation, but whose superficial aspects have in great part been acquired in a moderately recent geological period, not necessarily exceeding a few hundred or thousand years. To this late period dates the existing conformation of the creek placers in greater part; and the mammoth was witness to their location.

4. Much or most of the gold in the creek claims had its source in the upper benches—the gravel, etc.—of the high-level terranes which marked the former elevated position of the regional waters. Water-worn drift is found at practically all heights of the immediate region, and therefore no limit can be told at this time to the heights at which gold may or may not be found and worked with profit.

5. The evidence in hand is as yet insufficient to permit us to state what or where was the ultimate source of the gold, as that of the high terranes is part of a wash deposit. Some of the gold, but probably not very much, is a distinct product of the immediate location in which it is found.

6. There is seemingly good evidence pointing to the existence in a recent period of a high-level interior sea or series of vast lagoons in the region which is to-day the drainage basin of the upper Yukon. From this lacustrine state the Yukon has gradually, and perhaps even rapidly, drained down to the character of the modern swiftly flowing stream, with powerful and almost equally rapid tributaries.

7. No unequivocal evidences of glacial action are met with in the region, and the ter-

minal indices of the great continental northward moving ice-sheet are found about one hundred and twenty-five to one hundred and fifty miles southward of the tract.

8. Evidences of both ancient and comparatively recent (and even modern) volcanic action are abundant in and around the Klondike region; the region is, therefore, one which has been largely moulded and effected by igneous constructions (dikes, bosses, fluent sheets, etc.).

9. The known facts of the Klondike region, so far as they relate to the primal origin of the gold in the placers, favour the theory of chemical solution and precipitation, as opposed to the generally accepted view of accumulation from disintegrated reefs, lodes, or veins.\*

10. It seems probable that the Klondike gold region is merely a fractional part of a discontinuously continuous auriferous tract that extends in a westerly course into the heart of Alaska and southward into British Columbia.

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\* The investigations of E. D. Levat among the placers of Eastern Siberia would seem to indicate that some of these had obtained their gold, at least in part, as a direct chemical precipitate. See his work, *L'Or en Sibérie Orientale*, 1897; also, Petermann's *Mitteilungen*, 1898, p. III.

## XII.

### OBSERVATIONS ON THE LAWS GOVERNING PLACER MINING IN THE YUKON DISTRICT, WITH CERTAIN GEOLOGICAL AND LEGAL CONTENTIONS.

THE laws governing placer mining in the Yukon district of Canada, which are appended herewith, while they are in the main sufficiently explicit as to their intent, are in part "tempered" by an amount of obscurity which has given rise to considerable complication and personal difficulty. The recognised fact, too, that these laws are not at all times interpreted by the governing officials with that intelligence which should go with their proper understanding, or with unfailing impartiality, has not helped to allay the anxiety resulting from such complication, nor has it inspired confidence in the full protection which these laws are assumed to offer. On the other hand, the vagueness of some of the provisions is such as to permit of the exercise of considerable latitude in a choice of interpretation, and unquestionably much un-

fair advantage has been taken of this possibility; again, it is true that in many cases of dispute a judicious rendering has been given where the inflexibility of a fully framed statute might have stood in the way of any satisfactory decision. A few remarks on some of the paragraphs of the statutes are here offered by way of exposing their defects and obscurities and assisting toward a proper understanding of the amount of rigid adherence to a full meaning which the Government officials have insisted upon up to the present time.

*Legal Post.*—Probably not one post out of fifty conforms to the statute requirements of size—four inches across the face which bears the inscription. In many locations wood sufficiently large to make four-inch stakes is no longer to be had, but even where obtainable the miners have largely satisfied themselves with posts of much ruder form and smaller measure. All seemingly have been accepted without question at the Recorder's office.

*Close Season.*—The statute definition of this term—"the period of the year during which placer mining is generally suspended"—finds no acknowledgment in the Yukon district. Placer mining, whether in the one form of winter



burning or spring and summer sluicing, is practically continuous for the entire year, and consequently there is no season of work. In lieu of it the Gold Commissioner has accepted as the annual requirement *continuous* three months' work, with no absence from the claim during this time of more than seventy-two consecutive hours. This is the so-called "representation"—that which permits a locator to hold a claim, with proper renewals, from year to year. Advantage is taken in certain quarters of the seventy-two hours' period of allowed absence to use part of it for representation elsewhere, inasmuch as by a "judicious" apportioning of this time representation can easily be effected on two nearly contiguous claims in the same period of three months—e. g., by shifting the *locus* of the work every day.

*Nature and Size of Claims.*—It will be observed from paragraphs 10 to 14 that no mention is made of "bench" claims, those officially recognised being "creek" (or "gulch"), "river," and "hill" claims; yet it is well known that most of the better hillside claims—such as those of French and Gold Hills, Skookum Hill, etc.—are recorded as bench claims, and with a signification wholly different from that of a true

"hillside" claim. The latter may measure 250 feet (along the line of the stream) by 1,000 (on the slope of the hill), whereas the bench is limited to 250 by 250 feet, and those regulated by an earlier statute are only 100 by 100 feet (French Hill, etc.). Paragraph 14 of the statutes recites that "all other placer claims shall be 250 feet square," and probably this is intended to include what are now known as "benches"; but the definition of "hill claim" (hillside claim) as contained in paragraph 13 does not state that its extent shall in any way be limited by marked benches or terraces on its slope; on the contrary, it clearly states that "the summit of the hill (provided the distance does not exceed 1,000 feet)" shall constitute the farthest extent of the claim. Whatever may be the custom with regard to the limitation of hillside claims to bench lines, it is certain that in the Klondike region it has given rise to much complexity of classification and registration, and has been a fruitful source of contention, which can only be intensified through a better general understanding of the region. It is almost needless for a geologist to remark that in a region of river and creek terraces some of these are so indefinitely defined as to be hardly appre-

cialable even to the practised eye. Here, consequently, a free continuous slope is presented to the "summit of the hill" for a hillside claim. In an almost contiguous section of the same course the terraces or benches come out with bold definition, and the hillside is cut up into one or more tiers of "bench claims." Almost every turn of the stream will present alternations, and in swift succession, of benches and continuous slopes, and the two sides of the stream may be wholly different. The law seems to give no countenance to such an irregular classification, and however much one may feel disposed to accede to any arbitrary statute, so long as it is a statute, one framed on the principle of inequality such as this one will never meet with graceful acceptance on the part of locators.

*Measurement of Hillside Claims.*—It is a singular fact, and one very much to the advantage of claim holders, that the measurement of many—perhaps even the vast majority of the hillside claims, and also of the benches—is made on an assumed horizontal plane extending into the hill, and not along the face of the slope. In other words, the 250 or 1,000 feet allowed by law are not taken by measurement on the surface upward from the stream, but as an ex-

tent of that distance extending at right angles from the stream, and with whatever amount of slope a line drawn vertically upward from the end of the 250 or 1,000 feet to the free surface would cut off. A bench claim can thus easily have a length up hill of 300 feet or more, and a hill-side claim of 1,200 or 1,300 feet. Yet the wording of statute 13 would seem to admit of but one interpretation—one distinctly opposed to that assumed by the Dominion surveyors. It clearly states that the end boundaries of a hill claim shall be constituted by parallel lines drawn at right angles from the base line running to the summit, "provided the distance does not exceed 1,000 feet." If this distance means one of angle and not of surface measurement the miners should be so informed, as their stake settings are almost invariably determined by tape measurements of the surface. The reverse or angle measurements, which some of the Dominion surveyors have adopted, have led to encroachments, curtailments, and the making of "fractions"—some of them, it is claimed, for the well-being of certain parties. It is possible that a misinterpretation of paragraph 18, which reads that all claims "shall be measured horizontally, irrespective of inequalities on the sur-

face of the ground," may have influenced the surveyors to their construction of the statute—manifestly an erroneous one, as by such measurements a bench claim on a steeply pitching slope might readily take in part of two benches, even where the slope measurement of the lowest exceeds 250 feet.

*Form of Placer Claims.*—Paragraph 15 of the statutes states that "every placer claim shall be as nearly as possible rectangular in form." In clear violation of this law a number of bench claims, and a few of these among the richest, have been staked and surveyed in the form of a diamond, and they have been officially accepted as such in the Recorder's office. It is hardly necessary to comment upon the irregularity of such a practice, and upon the advantages that its exercise may bring to those who are more than honestly shrewd in the selection of their locations; and the hardship, a grossest injustice, that might be inflicted upon others less favourably situated. Furthermore, the execution of a plot in diamond form must necessarily lead to the formation of fractions—good property entirely thrown out from entry, or to be surreptitiously acquired by those whose claims immediately adjoin or enclose it.



THE JUNCTION LINE OF CREEK AND BENCH  
(OR HILLSIDE) CLAIMS.

The most serious difficulties that have thus far arisen in the Klondike region relative to claim ownership are those that are associated with the proper limitation, on the banks, of the creek or gulch claims—in other words, with the determination of the junction line between the creek claims and the immediately adjoining benches or hillsides. The precise meaning of the term “rim rock” is the principal bone of contention in the controversy. Paragraph 10, which defines the nature and size of claims, states that the outer (right and left) boundaries of a creek claim shall be defined by “lines along bed or rim rock three feet higher than the rim or edge of the creek, or the lowest general level of the gulch within the claim, so drawn or marked as to be at every point three feet above the rim or edge of the creek or the lowest general level of the gulch.” This definition appears to be precise, and it can only mean—if words have any meaning—that the boundaries are set on the banks of the creek or gulch on the three-foot line as defined. With a singular perversion of the meaning of the terms “bed rock” and

"rim rock," however, certain prospectors, and with them Dominion surveyors and Recorders who have upheld the validity of the claims in question, have argued that if rim rock as solid rock does not appear on the surface of the bank which properly delimits the valley of the stream, they have the right to assume that their claims extend into the bank or hillside until solid "bed rock" or "rim rock" is reached at the three-foot level! Many of the high benches, being purely gravel and shingle deposits and resting on a flat flood plain without immediate outcrop, would thus fall into the category of creek claims. The absurdity of such a contention, even if it is admitted that the question of "slides" may occasionally make the strict location of the creek-claim boundaries somewhat intricate, need hardly be commented upon. In fact, a contention of this kind could hardly have arisen but for the discovery of coarse nugget gold in some of the lower benches and the greedy desire of the creek-claim owners to obtain possession of them through a legitimized extension of their territory. The case of 31 Eldorado, with a decision in favour of extension and a subsequent reversal of the decision, followed close upon the discovery of a nugget

in what had previously been recognised as a "bench." The drawing of a boundary line within a hill or bench along rim rock would indeed be an extraordinary performance, but to assume that rim rock necessarily means anything more than a firm bounding bank—especially when the statute distinctly asserts that the line following it shall be at every point three feet above the rim or edge of the creek, or the lowest general level of the gulch—is hardly less remarkable, and one only indicative of unfamiliarity with physiographic terms.

*Removal of Stakes.*—Paragraph 32 judiciously holds that after the recording of a claim the removal of any post by the holder thereof or by any person acting in his behalf for the purpose of changing the boundaries of same shall act as forfeiture to a claim. Unfortunately, the law makes no reference to a rectification of boundaries such as might be made imperative by the discovery of errors in measurement; and it is a very frequent occurrence, singular though it may seem, that many of the claims lack largely of the length which is allowed to them by law. A number of the creek claims that I measured were found to have their lines taken on the curve of the stream, instead of on a direct line

through the windings, and many of the bench and hillside claims were laid out on the irregularities of slope instead of on the plane underlying the surface. Again, in some cases, where the creek claims were laid out in 500 feet lengths, it was assumed that two bench claims (of 250 feet length each) must conform to their boundaries, so that if by chance the creek claim was short, so was one of the bench claims. Despite the law of no change, some of the official surveyors are freely exercising the right of readjusting stakes for their clients. In this way more than one claim, assumed to have its boundaries firmly and irrevocably set, but, unfortunately to its owner, not officially surveyed and without the surveyor's mark attached to an official survey pole, has been invaded by a claim with rectified borders. These encroachments have given rise to some interesting forms of litigation, and the outcome will be a matter of considerable importance to many.

#### REGULATIONS GOVERNING PLACER MINING IN THE YUKON TERRITORY.

The following regulations, bearing date of January 18, 1898, are those that are in force

at this writing, barring certain enactments of March 29 and 30, 1899, which are appended:

#### INTERPRETATION.

“Free miner” shall mean a male or female over the age of eighteen, but not under that age, or joint-stock company, named in, and lawfully possessed of, a valid existing free miner’s certificate, and no other.

“Legal post” shall mean a stake standing not less than four feet above the ground and flatted on two sides for at least one foot from the top. Both sides so flatted shall measure at least four inches across the face. It shall also mean any stump or tree cut off and flatted or faced to the above height and size.

“Close season” shall mean the period of the year during which placer mining is generally suspended. The period to be fixed by the Mining Recorder in whose district the claim is situated.

“Mineral” shall include all minerals whatsoever other than coal.

“Joint-stock Company” shall mean any company incorporated for mining purposes under a Canadian charter or licensed by the Government of Canada.



“Mining Recorder” shall mean the official appointed by the Gold Commissioner to record applications and grant entries for claims in the mining divisions into which the Commissioner may divide the Yukon District.

#### FREE MINERS AND THEIR PRIVILEGES.

1. Every person over, but not under eighteen years of age, and every joint-stock company, shall be entitled to all the rights and privileges of a free miner, under these regulations and under the regulations governing quartz mining, and shall be considered a free miner upon taking out a free miner's certificate. A free miner's certificate issued to a joint-stock company shall be issued in its corporate name. A free miner's certificate shall not be transferable.

2. A free miner's certificate may be granted for one year to run from the date thereof or from the expiration of the applicant's then existing certificate, upon the payment therefor of the sum of ten dollars, unless the certificate is to be issued in favour of a joint-stock company, in which case the fee shall be fifty dollars for a company having a nominal capital of one hundred thousand dollars or less, and for a company

having a nominal capital exceeding one hundred thousand dollars, the fee shall be one hundred dollars. Only one person or joint-stock company shall be named in a certificate.

3. A free miner's certificate shall also grant to the holder thereof the privilege of fishing and shooting, subject to the provisions of any act which has been passed, or which may hereafter be passed for the protection of game and fish; also the privilege of cutting timber for actual necessities, for building houses, boats, and for general mining operations; such timber, however, to be for the exclusive use of the miner himself, but such permission shall not extend to timber which may have been heretofore or which may hereafter be granted to other persons or corporations.

4. Free miner's certificates may be obtained by applicants in person at the Department of the Interior, Ottawa, or from the agents of Dominion lands at Winnipeg, Manitoba; Calgary, Edmonton, Prince Albert, in the Northwest Territories; Kamloops and New Westminster, in the Province of British Columbia; at Dawson City in the Yukon District; also from agents of the Government at Vancouver and Victoria, B. C., and at other places which may

from time to time be named by the Minister of the Interior.

5. If any person or joint-stock company shall apply for a free miner's certificate at the agent's office during his absence, and shall leave the fee required by these regulations with the officer or other person in charge of said office, he or it shall be entitled to have such certificate from the date of such application; and any free miner shall at any time be entitled to obtain a free miner's certificate commencing to run from the expiration of his then existing free miner's certificate, provided that when he applies for such certificate he shall produce to the agent, or in case of his absence shall leave with the officer or other person in charge of the agent's office, such existing certificate.

6. If any free miner's certificate be accidentally destroyed or lost, the owner thereof may, on payment of a fee of two dollars, have a true copy of it, signed by the agent, or other person by whom or out of whose office the original was issued. Every such copy shall be marked "Substituted Certificate"; and unless some material irregularity be shown in respect thereof, every original or substituted free miner's certifi-

cate shall be evidence of all matters therein contained.

7. No person or joint-stock company will be recognised as having any right or interest in or to any placer claim, quartz claim, mining lease, bed-rock flume grant, or any minerals in any ground comprised therein, or in or to any water right, mining ditch, drain, tunnel, or flume, unless he or it and every person in his or its employment shall have a free miner's certificate unexpired. And on the expiration of a free miner's certificate the owner thereof shall absolutely forfeit all his rights and interest in or to any placer claim, mining lease, bed-rock flume grant, and any minerals in any ground comprised therein, and in or to any and every water right, mining ditch, drain, tunnel, or flume, which may be held or claimed by such owner of such expired free miner's certificate, unless such owner shall, on or before the day following the expiration of such certificate, obtain a new free miner's certificate. Provided, nevertheless, that should any co-owner fail to keep up his free miner's certificate, such failure shall not cause a forfeiture or act as an abandonment of the claim, but the interest of the co-owner who shall fail to keep up his free min-

er's certificate shall, *ipso facto*, be and become vested in his co-owners, *pro rata* according to their former interests; provided, nevertheless, that a shareholder in a joint-stock company need not be a free miner, and, though not a free miner, shall be entitled to buy, sell, hold, or dispose of any shares therein.

8. Every free miner shall, during the continuance of his certificate, but not longer, have the right to enter, locate, prospect, and mine for gold and other minerals upon any lands in the Yukon District, whether vested in the Crown or otherwise, except upon Government reservations for town sites, land which is occupied by any building, and any land falling within the curtilage of any dwelling house, and any land lawfully occupied for placer mining purposes, and also Indian reservations.

9. Previous to any entry being made upon lands lawfully occupied, such free miner shall give adequate security, to the satisfaction of the Mining Recorder, for any loss or damage which may be caused by such entry; and after such entry he shall make full compensation to the occupant or owner of such lands for any loss or damage which may be caused by reason of such entry; such compensation, in case of dis-



pute, to be determined by a court having jurisdiction in mining disputes, with or without a jury.

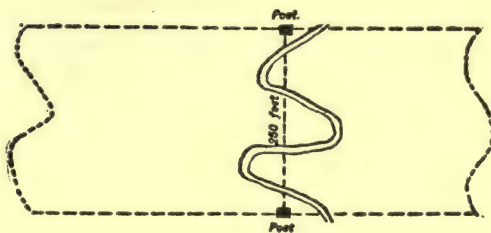
#### NATURE AND SIZE OF CLAIMS.

10. A creek or gulch claim shall be 250 feet long measured in the general direction of the creek or gulch. The boundaries of the claim which run in the general direction of the creek or gulch shall be lines along bed or rim rock three feet higher than the rim or edge of the creek, or the lowest general level of the gulch within the claim, so drawn or marked as to be at every point three feet above the rim or edge of the creek or the lowest general level of the gulch, opposite to it at right angles to the general direction of the claim for its length, but such boundaries shall not in any case exceed 1,000 feet on each side of the centre of the stream or gulch. (See Diagram No. 1.)

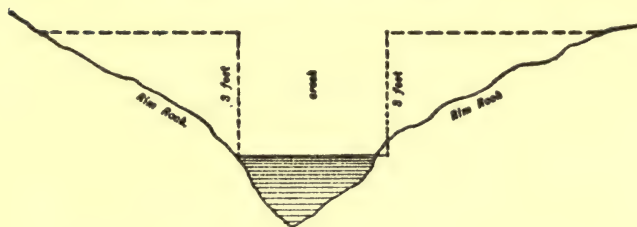
11. If the boundaries be less than one hundred feet apart horizontally, they shall be lines traced along bed or rim rock one hundred feet apart horizontally, following as nearly as practicable the direction of the valley for the length of the claim. (See Diagram No. 2.)

12. A river claim shall be situated only on one side of the river and shall not exceed 250

DIAGRAM No. 1.  
PLAN OF CREEK OR GULCH CLAIM.



SECTIONAL PLAN OF A CREEK CLAIM.



SECTIONAL PLAN OF A GULCH CLAIM.



feet in length, measured in the general direction of the river. The other boundary of the claim which runs in the general direction of the river shall be lines along bed or rim rock three feet higher than the rim or edge of the river within the claim so drawn or marked as to be at every point three feet above the rim or edge of the river opposite to it at right angles to the general direction of the claim for its length; but such boundaries shall not in any case be less than 250 feet, or exceed a distance of 1,000 feet from low-water mark of the river. (See Diagram No. 3.)

13. A "hill claim" shall not exceed 250 feet in length, drawn parallel to the main direction of the stream or ravine on which it fronts. Parallel lines drawn from each end of the base line at right angles thereto, and running to the summit of the hill (provided the distance does not exceed 1,000 feet), shall constitute the end boundaries of the claim.

14. All other placer claims shall be 250 feet square.

15. Every placer claim shall be as nearly as possible rectangular in form, and marked by two legal posts firmly fixed in the ground in the manner shown in diagram No. 4. The line

DIAGRAM No. 2.

PLAN SHEWING SIDE BOUNDARIES LESS THAN  
100 FEET APART

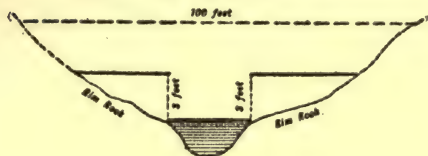


DIAGRAM No. 3.

(SECTIONAL PLAN OF A RIVER CLAIM.)

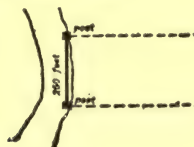


DIAGRAM No. 4.

(SHEWING HOW CLAIMS ARE TO BE STAKED.)  
PLAN OF A CREEK OR GULCH CLAIM.



PLAN OF A RIVER CLAIM



between the two posts shall be well cut out so that one post may, if the nature of the surface will permit, be seen from the other. The flatted side of each post shall face the claim, and on each post shall be written on the side facing the claim a legible notice stating the name or number of the claim, or both if possible, its length in feet, the date when staked, and the full Christian and surname of the locator.

16. Every alternate ten claims shall be reserved for the Government of Canada. That is to say, when a claim is located, the discoverer's claim and nine additional claims adjoining each other and numbered consecutively will be open for registration. Then the next ten claims of 250 feet will be reserved for the Government, and so on. The alternate groups of claims reserved for the Crown shall be disposed of in such manner as may be decided by the Minister of the Interior.

17. The penalty for trespassing upon a claim reserved for the Crown shall be immediate cancellation by the Mining Recorder of any entry or entries which the person trespassing may have obtained, whether by original entry or purchase, for a mining claim, and the refusal by the Mining Recorder of the acceptance of any



application which the person trespassing may at any time make for a claim. In addition to such penalty, the mounted police, upon a requisition from the Mining Recorder to that effect, shall take the necessary steps to eject the trespasser.

18. In defining the size of claims, they shall be measured horizontally irrespective of inequalities on the surface of the ground.

19. If any free miner or party of free miners discover a new mine, and such discovery shall be established to the satisfaction of the Mining Recorder, creek, river, or hill claims of the following size shall be allowed, namely:

To one discoverer, one claim, 500 feet in length.

To a party of two discoverers, two claims, amounting together to 1,000 feet in length.

To each member of a party beyond two in number, a claim of the ordinary size only.

20. A new stratum of auriferous earth or gravel situated in a locality where the claims have been abandoned shall for this purpose be deemed a new mine, although the same locality shall have been previously worked at a different level.

21. The forms of application for a grant for

placer mining, and the grant of the same, shall be those contained in Forms "H" and "I" in the schedule hereto.

22. A claim shall be recorded with the Mining Recorder in whose district it is situated, within ten days after the location thereof, if it is located within ten miles of the Mining Recorder's office. One extra day shall be allowed for every additional ten miles or fraction thereof.

23. In the event of the claim being more than one hundred miles from a Recorder's office, and situated where other claims are being located, the free miners, not less than five in number, are authorized to meet and appoint one of their number a Free Miners' Recorder, who shall act in that capacity until a Mining Recorder is appointed by the Gold Commissioner.

24. The Free Miners' Recorder shall, at the earliest possible date after his appointment, notify the nearest Government Mining Recorder thereof, and upon the arrival of the Government Mining Recorder, he shall deliver to him his records and the fees received for recording the claims. The Government Mining Recorder shall then grant to each free miner whose name appears in the records an entry for his claim on form "I" of these regulations, provided an

application has been made by him in accordance with form "H" thereof. The entry to date from the time the Free Miners' Recorder recorded the application.

25. If the Free Miners' Recorder fails within three months to notify the nearest Government Mining Recorder of his appointment, the claims which he may have recorded will be cancelled.

26. During the absence of the Mining Recorder from his office, the entry for a claim may be granted by any person whom he may appoint to perform his duties in his absence.

27. Entry shall not be granted for a claim which has not been staked by the applicant in person in the manner specified in these regulations. An affidavit that the claim was staked out by the applicant shall be embodied in form "H" in the schedule hereto.

28. An entry fee of fifteen dollars shall be charged the first year, and an annual fee of fifteen dollars for each of the following years. This provision shall apply to claims for which entries have already been granted.

29. A statement of the entries granted and fees collected shall be rendered by the Mining Recorder to the Gold Commissioner at least

every three months, which shall be accompanied by the amount collected.

30. A royalty of ten per cent on the gold mined shall be levied and collected on the gross output of each claim. The royalty must be paid at banking offices to be established under the auspices of the Government of Canada, or to the Gold Commissioner, or to any Mining Recorder authorized by him. The sum of twenty five hundred dollars shall be deducted from the gross annual output of a claim when estimating the amount upon which royalty is to be calculated, but this exemption shall not be allowed unless the royalty is paid at a banking office or to the Gold Commissioner or Mining Recorder. When the royalty is paid monthly or at longer periods, the deduction shall be made ratable on the basis of twenty-five hundred dollars per annum for the claim. If not paid to the bank, Gold Commissioner, or Mining Recorder, it shall be collected by the customs officials or police officers when the miner passes the posts established at the boundary of a district. Such royalty to form part of the consolidated revenue, and to be accounted for by the officers who collect the same in due course. The time and manner in which such

royalty shall be collected shall be provided for by regulations to be made by the Gold Commissioner.\*

31. Default in payment of such royalty, if continued for ten days after notice has been posted on the claim in respect of which it is demanded, or in the vicinity of such claim, by the Gold Commissioner or his agent, shall be followed by cancellation of the claim. Any attempt to defraud the Crown by withholding any part of the revenue thus provided for, by making false statements of the amount taken out, shall be punished by cancellation of the claim in respect of which fraud or false statements have been committed or made. In respect to the facts as to such fraud or false statements or non-payment of royalty, the decision of the Gold Commissioner shall be final.

32. After the recording of a claim the removal of any post by the holder thereof or by any person acting in his behalf for the purpose of changing the boundaries of his claim shall act as a forfeiture of the claim.

33. The entry of every holder of a grant for placer mining must be renewed and his receipt

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\* The amount of exemption has, by an enactment of March 30, 1899, been raised to five thousand dollars.



relinquished and replaced every year, the entry fee being paid each time.

34. The holder of a creek, gulch, or river claim may, within sixty days after staking out the claim, obtain an entry for a hill claim adjoining it, by paying to the Mining Recorder the sum of one hundred dollars. This permission shall also be given to the holder of a creek, gulch, or river claim obtained under former regulations, provided that the hill claim is available at the time an application is made therefor.

35. No miner shall receive a grant of more than one mining claim in a mining district, the boundaries of which shall be defined by the Mining Recorder, but the same miner may also hold a hill claim, acquired by him under these regulations in connection with a creek, gulch, or river claim, and any number of claims by purchase; and any number of miners may unite to work their claims in common, upon such terms as they may arrange, provided such agreement is registered with the Mining Recorder and a fee of five dollars paid for each registration.

36. Any free miner or miners may sell, mortgage, or dispose of his or their claims, provided such disposal be registered with, and a fee of two dollars paid to the Mining Recorder, who

shall thereupon give the assignee a certificate in the form "J" in the schedule hereto.

37. Every free miner shall during the continuance of his grant have the exclusive right of entry upon his own claim for the minerlike working thereof, and the construction of a residence thereon, and shall be entitled exclusively to all the proceeds realized therefrom, upon which, however, the royalty prescribed by these regulations shall be payable; provided that the Mining Recorder may grant to the holders of other claims such right of entry thereon as may be absolutely necessary for the working of their claims, upon such terms as may to him seem reasonable. He may also grant permits to miners to cut timber thereon for their own use.

38. Every free miner shall be entitled to the use of so much of the water naturally flowing through or past his claim, and not already lawfully appropriated, as shall, in the opinion of the Mining Recorder, be necessary for the due working thereof, and shall be entitled to drain his own claim free of charge.

39. A claim shall be deemed to be abandoned and open to occupation and entry by any person when the same shall have remained unworked on working days, excepting during

the close season, by the grantee thereof or by some person on his behalf for the space of \* seventy-two hours, unless sickness or other reasonable cause be shown to the satisfaction of the Mining Recorder, or unless the grantee is absent on leave given by the Mining Recorder, and the Mining Recorder, upon obtaining evidence satisfactory to himself, that this provision is not being complied with, may cancel the entry given for a claim.

40. If any cases arise for which no provision is made in these regulations, the provisions of the regulations governing the disposal of mineral lands other than coal lands, approved by His Excellency the Governor in Council on the 9th of November, 1889, or such other regulations as may be substituted therefor, shall apply.

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\* Seventy-two hours means three consecutive days of twenty-four hours each.

CHANGES RECENTLY MADE BY ORDERS IN COUNCIL IN THE REGULATIONS OF THE YUKON TERRITORY.

DATE.

- |  |   |
|--|---|
| <p><i>March 30,</i><br/><i>1899.</i></p> | <p>1. Regulations shall come into force on the date upon which they are received by the Gold Commissioner and posted in his office, which shall be within twenty-four hours after they are received by him.</p>   |
| <p><i>March 30,</i><br/><i>1899.</i></p> | <p>2. An exemption of five thousand dollars shall hereafter be allowed on the gross annual output of claims in the Yukon Territory in calculating the royalty.</p>  |
| <p><i>March 29,</i><br/><i>1899.</i></p> | <p>3. No officer or other person employed by the Government of Canada in any capacity whatever shall hereafter stake out or record mining claims or acquire by purchase or otherwise any mining claims or Dominion lands of any kind or description in the Yukon Territory.</p> |





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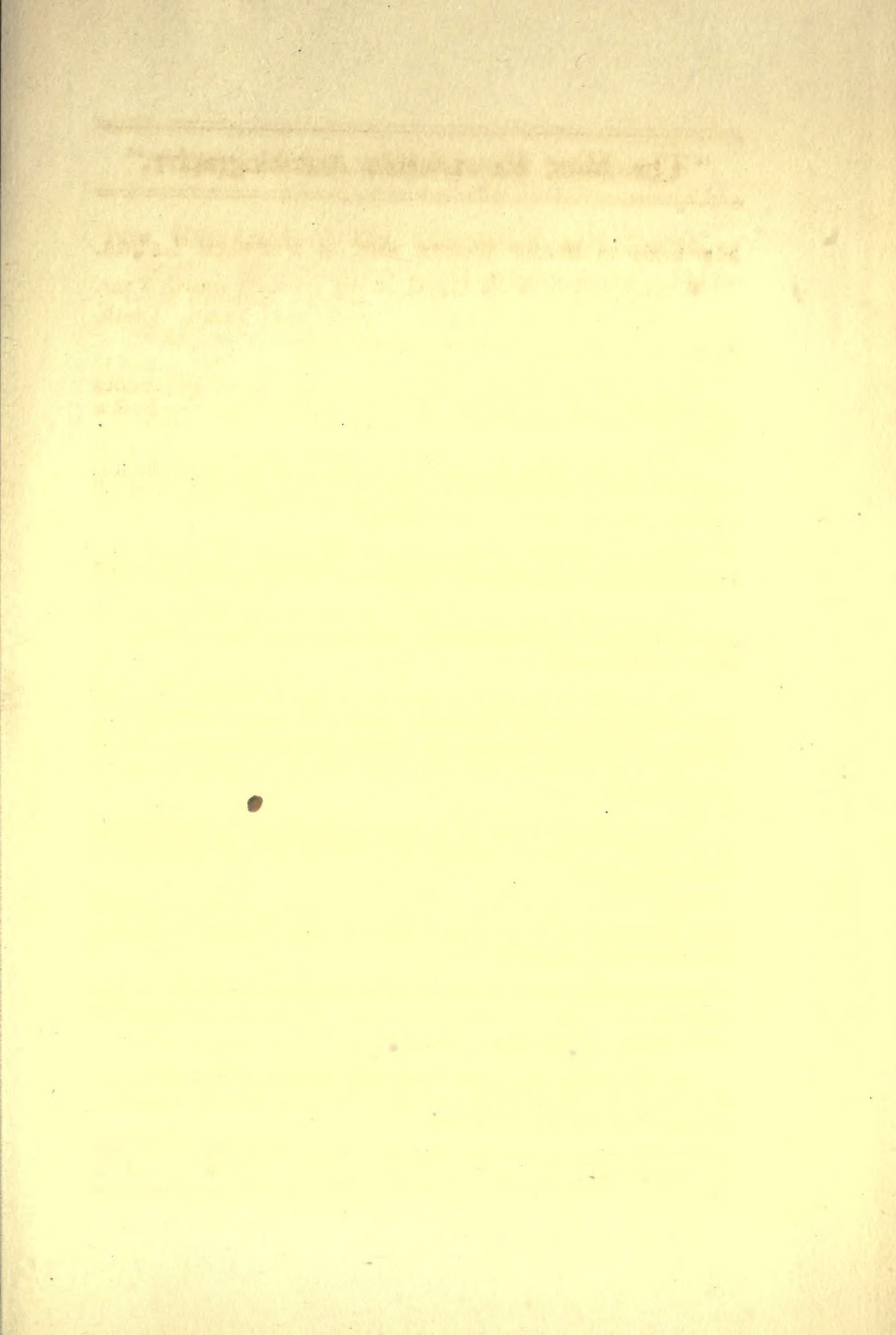
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